

AMERICAN VETERINARY REVIEW

EDITED MONTHLY BY

Prof. A. LIAUTARD, M.D., V.M.,

*Foreign Corresponding Member of the Central Society of Veterinary Medicine (Paris).
Honorary Fellow of the Royal College of Veterinary Surgeons (England).*

WITH THE ASSISTANCE OF

Prof. O. SCHWARTZKOPF, V.M., McKillip Veterinary College, Chicago, Ill.

Prof. Wm. L. ZUILL, M.D., D.V.S., late of the University of Pennsylvania (Vet. Dept.).

W. L. WILLIAMS, V.S., Agricultural College, Bozeman, Mont.

Prof. ROSCOE R. BELL, D.V.S., American Veterinary College, New York, N. Y.

J. F. WINCHESTER, D.V.S., Lawrence, Mass.

NELSON P. HINKLEY, V.S., United States Veterinary Inspector, Buffalo, N. Y.

GEORGE H. BAILEY, D.V.S., State Veterinarian, Portland, Me.

Prof. W. B. NILES, D.V.M., Ames, Ia.

L. H. HOWARD, D.V.S., Boston, Mass.

W. L. LA BAW, D.V.S., Harvard Veterinary Dept., Massachusetts

And several others.

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TABLE OF CONTENTS, VOLUME XVIII.

EDITORIAL.

	PAGE
AMERICAN VETERINARY REVIEW.....	I
Sixth International Congress of Veterinary Medicine.....	2
Veterinary Education.....	2
A Few More Veterinarians.....	81
New York State Veterinary College.....	82, 657
Normandy Breed of Cattle.....	161
Regulation of Veterinary Practice.....	162
McKillip Veterinary College.....	164, 242
An Error of Name.....	164
Dr. W. Bryden.....	164
Dishorning in Cattle.....	241
Another in the Ranks.....	313
Norman Bovine Race.....	314
United States Veterinary Medical Association.....	385, 449
Professional Etiquette.....	389
Meeting of the United States Veterinary Medical Association.....	390
New York State Veterinary Society.....	391
Van Swieten Solution.....	391
Société Centrale Médecine Vétérinaire.....	513
To Alma Mater Rescue.....	514
A Friend's Return.....	515
Complimentary Notice.....	515
New Instruments.....	516
Correction.....	517
Cotentine Cow.....	585
Stamping Out Tuberculosis.....	586
A Welcome Notice.....	587
Malleine—Its Uses.....	588
Another Veterinary College.....	658
Le Roi est Mort—Vive le Roi.....	659
More Room Inside.....	659
Pleuro-Pneumonia Again.....	739
Bovine Tuberculosis.....	740
Embargo on American Cattle.....	742
Tuberculosis Scare.....	811
Obituary.—John Gamgee.....	813

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ORIGINAL ARTICLES.

	PAGE
Typhoid Fever ; or, Contagious Influenza in the Horse. By Prof. W. L. Zuill, M.D., D.V.S.	3, 91, 193
Meat Inspection. By Charles Morot, M.V.	13
A Variety of Practical Cases. By J. D. Fair, D.V.S.	19
Notes on the Method of Spaying Bitches. By Dr. M. Francis, V.S.	27
Eserine. By R. P. Steddon, V.S.	29
Symptoms and Treatment of Diseases Following Parturition. By Dr. A. G. Alverson	31
Some Remote Ancestors of the Horse. By Dr. W. J. Martin	34
Castration. By W. E. B. Miller, D.V.S.	84, 183, 285
Odontome in a Young Foal. By Dr. W. L. Williams	101
Modern Advances in Scientific Surgery. By L. A. Thomas, D.V.S.	104
Parturient Apoplexy. By F. E. Pierce, D.V.S.	109
Prevention of Tuberculosis. By Dr. J. M. Parker	165
Actinomycosis. By Dr. G. F. Starkey	171, 259
Review of My Work with Tuberculin. By Dr. J. Faust, V.S.	176
Azoturia. By W. S. Winget	202
Penetrant Cauterization in the Treatment of Lameness from Ostitis. By E. Sturge, V.S.	205
Inflammation. By Dr. A. Babb, D.V.S.	213
The Dose of Tuberculin. By George A. Kinnell, M.R.C.V.S.	243
Fusion of Temporary Inferior Molars with Inferior Maxilla in the Horse. By Prof. W. L. Williams, D.V.S.	245
Surgical Treatment of the Diseases of the Hock Joint. By Prof. W. L. Zuill, M.D., D.V.S.	247
Punctured Wounds. By S. H. Bauman, D.V.S.	263
Practical Use of Cocaine. By J. E. Brown, D.V.S.	268
Pseudo-Rabies in Cattle. By G. A. Johnson, D.V.S.	272
A Discussion of the Report on Veterinary Education. By Prof. Olof Schwarzkopf, V.M.D.	278, 325
Pyo-Septhamie in Foals Caused by Phlebitis Umbilicalis. By John Wende, V.S.	280
The External Conformation of the Horse. By Prof. E. A. A. Grange, V.S., ...	314, 416
.....	489, 564
My Experience with Tuberculin in a Small Herd of Cattle. By C. E. Clayton, D.V.S.	328
Glycosuria Produced Experimentally in Animals by Physical Excitations. By Paul Gibier, M.D.	331
Homœopathy Applied to Veterinary Medicine. By F. B. Carleton, M.D.V.	333
Purpura Hæmorrhagica—Edema, Anasarca, Etc. By H. C. Spencer, D.V.S.	337
A Bacteriological Study of Equine Fistulæ. By C. M. Day	340
The Agricultural Aspect of Tuberculosis. By Sessions	351
Fistula. By Dr. J. T. Nattress	355
Nails in Feet. By John A. Bell, V.S.	359
Pyometra in a Cat. By T. S. Cullen, M.D.	391
Acute Indigestion. By Dr. J. W. Ireland	394
Professional Etiquette. By Thos. Giffen, M.R.C.V.S., ...	398
The Principles of Antisepsis in the Treatment of Eczema. By Philip Heseltine, V.D., V.S.	404
Dentition Diseases. By Dr. I. B. Newby	410
Diagnosis and Prevention of Tuberculosis. By J. F. Winchester, D.V.S.	451
Prevalence of Bovine Tuberculosis. By Austin Peters, D.V.S.	457
Sanitary Condition of Dairy Farms. By J. M. Parker, D.V.M.	463
The Veterinarian's Relation to Client. By T. B. Pote, D.V.S.	471
Dairy Inspection. By F. A. Bolser, V.S.	479
Tetanus. By W. Carnes, V.S.	482
Address Delivered at the Opening of the McKillip Veterinary College. By Olof Schwarzkopf, V.M.	517

	PAGE
Neurectomy as a Practical Operation. By Prof. S. J. J. Harger.....	520
The Influence of Climate and Other Environments on the Distribution and Character of Disease. By Prof. W. L. Williams, V.S.....	539, 608, 691
How Can We Control the Prevalence of Tuberculosis Among Cattle? By M. R. Trumbower, D.V.S.....	552
The Disposition of Actinomycotic Cattle in the Union Stock Yards, Chicago, Ill. By M. R. Trumbower, D.V.S.....	557
Notes on So-called Slow-Fever. By Herbert S. Adams, V.S.....	589
Tuberculosis. By Prof. E. P. Niles, D.V.S.....	593, 685
Tuberculosis. By J. Faust, V.S.....	600
A Practical Use of Gutta-percha in Veterinary Dental Surgery. By R. C. Moore, D.V.S.....	617
Texas or Southern Cattle Fever. By Dr. T. R. Bray, D.V.S.....	620
The Diagnosis of Tuberculosis, Dealing Especially With the Dose of Tuberculin to be Used in Testing for Tuberculosis. By F. L. Russell, V.S.....	624
Acute Cerebral Inflammation, Embracing Cerebritis and Meningitis. By C. F. Dwinal, D.V.S.....	626
Eversion of the Uterus. By W. H. Ridge, V.S.....	629
Parturient Apoplexy in the Cow; A New Method of Treating this Disease Suggested. By R. H. Harrison, D.V.S.....	635
Contributions to the Study of Serum-Therapy in Diphtheria. By E. Roux, M.D., and Drs. L. Martin and A. Chaillon.....	660
Notes Upon Malleine. B. Prof. E. Nocard.....	671
Veterinary Education in Relation to the Practice of Veterinary Medicine in New York State. By Prof. Liautard, M.D., V.M.....	676
New Remedies in Veterinary Medicine. By T. W. Turner, D.V.S.....	696
The Value of Prophylactic Treatment in Anthrax. By John Faust, V.S.....	702
Some Experimental Researches on the Use of Malleine. By Prof. A. Liautard, M.D., V.M.....	706, 744, 845
Omphalo-Phlebitis. By John L. Tyler, M.D.....	753
Remarkable Cases in Practice. By S. S. Baker, D.V.S.....	755
Acute Indigestion. By Dr. W. Story.....	760
Homœopathy in Veterinary Practice. By Prof. C. E. Sayre, M.D., D.V.S.....	762, 836
State Suppression of Tuberculosis Unwarrantable if not Thorough. By James Law, M.R.C.V.S.....	813
An Unclassified Disease of Cattle. By T. B. Newby, D.V.S.....	829
Is It a Vegetable Toxicum? By J. C. Meyers, Sr., V.S.....	831
Tetany; or, Reflex Nervous Irritation. By T. J. Gunning, D.V.S.....	842

REPORTS OF CASES.

An Interesting Post-mortem. By L. H. Hempelmann, D.V.S.....	39
Lymphadenomatous Tumors. By M. Bunker, D.V.S.....	40
Traumatic Tetanus. By W. F. Derr, V.S.....	41
A Double Monster, Probably of the Heteralian Order. By H. B. Ambler, D.V.S.....	43
Uncommon Abdominal Obstruction. By E. P. Williamson, D.V.S.....	45
A Few Disappointments with Anæsthetics. By W. E. Smith, D.V.S.....	111
Suppurative Lymphangitis. By W. C. Siegmund, D.V.S.....	290
The Toxic Effects of Cocaine AA., Local Anæsthetic. By W. W. Yard, D.V.S.....	294
Tuberculosis in a Goat. By A. J. Sheldon, D.V.S.....	295
Specimens for the Museum of the American Veterinary College. R. H. Harrison, D.V.S.....	361
Peritoneal Resistance in the Dog. By C. E. Clayton, D.V.S.....	362
Kali Iodidi in the Treatment of Champignon. By W. C. Siegmund, D.V.S.....	426
Malleine in Glanders. By J. F. Winchester, D.V.S.....	428
Fatal Injury from a Slight Cause.—Fracture of Ossa Innominata.—Internal Hæmorrhage and Death. By O. Fausner, D.V.S.....	429
Punctured Wound of Perineum. By G. A. Johnson, D.V.M.....	430

	PAGE
Spasm of the Larynx. By M. U. Trumbower.....	499
Septicæmia Resulting From a Kick. By O. Fausner, D.V.S.....	573
Removal of Caulkboil by Elastic Ligature. By J. C. Myers, Jr., V.S.....	601
A Large Abdominal Hernia Successfully Treated. By E. E. Bittles, V.S.....	638
A Complicated Case—Distokia—Calculus of the Rumén. By G. T. Goubeaud, D.V.S.....	714
Glanders—Malleine. By J. S. Lamkin, D.V.S.....	718
Entero-Umbilical Fistula.—Punctured Wound of the Chest. By M. Francis.....	768, 769
An Outbreak of Texas Fever in Cattle. By G. W. Browning, V.S.....	770
Malleine in Glanders. By W. Siegmund, D.V.S.....	857
Pseudo-Chorea. By D. S. Wright, D.V.S.....	858

EXTRACTS FROM FOREIGN JOURNALS.

Parasites of the Sarcoma. By Richard Middleton, D.V.S.....	40
Pelvic Abscess.....	46
Puerperal Paralysis.....	47
Eczema in the Horse.....	48
Mercury Poisoning.....	49
Ruminatio Humana.....	49
Experimental Immunity Against Influenza.....	50
Value of Injections of Malleine in the Detection of Latent Glanders.....	50
Dislocation of the Right Kidney. By E. W. Enderton, M.R.C.V.S.....	51
Two Fish Hooks and Line Extracted from Œsophagus of Cow. By Archibald Renfrew, M.R.C.V.S.....	52
Preventive Inoculation Against Anthrax and Swine Plague in Hungary.....	54
Experimental Immunity Against Influenza.....	54
Paris Congress on Tuberculosis.....	55
Prognosis and Therapeutic Value of the Products of the Bacillus of Glanders. By M. Bonome.....	640
A Rare Case of Tuberculosis in the Horse. By Prof. G. P. Piaua.....	641
Œsophageal Jabot in a Colt.—Complications of Actual Cauterization by the Ap- plication of Bichromate of Potash Ointment. By M. A. Lobat.....	641, 642
Tracheotomy in the Treatment of Nasal Hæmorrhage. By M. Soucail.....	642
Sarcoma of the Sublumbar Region in the Cow, By M. Larrien.....	643
Contribution to the Study of Liver Diseases in Domestic Animals. By M. L. Beaudais.....	644

EXTRACTS FROM GERMAN PAPERS.

Pelvic Fracture as a Cause for Lameness.....	114
Hæmoglobinuria.....	115
Santonin in the Dog.....	116
Hairs in the Rumén of a Cow.....	117
Sarcoma or Leucæmia.....	301
Eseridine for Cattle.....	302
Petroleum in Therapeutics.....	303
Tuberculosis in Small Animals.....	362
Operation for Champignon.....	363
Leucocythæmia in Equidæ.....	364
Tuberculosis of the Penis.....	365
Tetanus in the Calf.....	366
Chronic Suppurative Inflammation of the Spleen.....	366
Enteric Calculi.....	366
Nicotine Poisoning in the Horse.....	367
Mycotic Gastro-Enteritis.....	367
Foreign Bodies in the Reticulum.....	432
Punctures of the Uterus.....	433
Remarkable Foreign Body in the Dog.....	434

	PAGE
Sarcoma of the Periosteum.....	435
Sarcoma of Testicle.....	436
Luxation of the Femur.....	437
Citrulline as Purgative.....	438
Loretin.....	438
Acute Lead Poisoning in Cattle.....	439
Inoculation of Anthrax.....	439
Effects of Temperature upon Tubercle Bacillus.....	440
Jabot.....	440

EXTRACTS FROM FRENCH JOURNALS.

Van Swieten Solution in the Treatment of Suppurative Diseases of Joints.....	296
Arytenoidectomy. By Prof. A. Labat.....	297
Contagious Diseases of Animals in Australia.....	297
Terpine and Terpinol in the Bronchitis of Horse and Dog. By Mr. Bissauge....	298
Dystokia by Pelvic Injury in the Bitch—Laparo Hysterotomy—Recovery. By Mr. E. Menveux.....	298
Treatment of the Tapeworm in the Dog. By Mr. Argoud.....	300
Official Regulations in the Use of Malleine. By Mr. Laquerriere.....	300

COLLEGE COMMENCEMENTS.

American Veterinary College.....	59
National Veterinary College.....	61
Kansas City Veterinary College.....	61
New York College of Veterinary Surgeons.....	61
Chicago Veterinary College.....	123
Ontario Veterinary College.....	124, 789
McGill University—Department of Comparative Medicine and Veterinary Science.	309

SOCIETY MEETINGS.

Massachusetts Veterinary Association.....	62, 227, 230, 794
California State Veterinary Medical Association.....	72, 374, 873
Virginia State Veterinary Medical Association.....	74, 510
Illinois State Veterinary Medical Association.....	75, 731
United States Veterinary Medical Association, 1893-94.....	127
United States Veterinary Medical Association, 1894-95.....	859
United States Veterinary Medical Association—Meeting of the Comitia Minora..	129
Erie County Veterinary Medical Association.....	130
Pennsylvania State Veterinary Medical Association.....	132
Minutes of the Sixth Annual Meeting of the Iowa State Veterinary Medical Assn.	144
Indiana Association of Veterinary Graduates.....	309, 508, 809
Veterinary Medical Association of New York County.....	232, 651, 806
Alumni Association of the American Veterinary College.....	233
Society of Veterinary Graduates of Wisconsin.....	234
Western Iowa Veterinary Medical Association.....	237
Veterinary Medical Association of New Jersey.....	238, 507
New York State Veterinary Medical Society.....	443
To the United States Veterinary Medical Association.....	444
Ohio State Veterinary Medical Association.....	445, 790
Maryland State Veterinary Medical Association.....	506
The Ontario Veterinary Association.....	870
Maine Veterinary Medical Association.....	653, 878
The Missouri Valley Veterinary Association.....	653, 868
Missouri State Veterinary Medical Association.....	730
Keystone Veterinary Medical Association.....	798, 877
The Iowa State Veterinary Medical Association.....	800

VETERINARY LEGISLATION.

	PAGE
Law Governing the Practice of Veterinary Medicine and Surgery in Virginia....	78
Regulating Veterinary Practice in Maryland.....	222
Regulating Veterinary Practice in Ohio.....	370
An Act to Amend the Public Health Law, and Making an Appropriation to Carry Out the Provisions Thereof. By L. W. Dinkelspiel, LL.D.....	648
An Act to Establish "The Live Stock Sanitary Commission," and to Provide for the Control and Suppression of Tuberculosis and other Dangerous Diseases of Domestic Animals in Pennsylvania.....	724
Veterinary Jurisprudence.—Veterinary Surgeon—Degree of Skill and Care. By L. W. Dinkelspiel	220

CORRESPONDENCE.

Recovery of Champignon in the Horse.....	80
Veterinary Exhibits at the World's Columbian Exhibition.....	157
Veterinarian Wanted.....	160
Regulating Veterinary Practice in Virginia.....	225
International Veterinary Congress and United States Veterinary Medical Association	226
Ontario Veterinary College.....	311
United States Veterinary Medical Association.....	312, 383
Tuberculosis in New York State.....	445
Tuberculosis of the Heart.....	446
Reply to the Faculty of Ontario Veterinary College.....	447
Veterinary Education.....	578
Notes on the Method of Spaying Bitches.....	580
Legislation in Ohio.....	582
Veterinary Legislation.....	583
California Quackery.....	584
Letter from Prof. O. Schwarzkopf, Regarding Dr. Salmon's Defence of Two-Year Schools	650
Veterinary Education.....	725
Dr. Salmon Replies to Professor Schwarzkopf.....	783
Professor Schwartzkopf again Replies to Dr. Salmon.....	864

OBITUARY.

John S. Saunders, D.V.S.....	156
Everett W. Rowland, D.V.S.....	382
Charles B. Michener, D.V.S.....	512
Dr. George A. Peters.....	734
P. F. Kiernan, D.V.S.....	880

SUNDRIES.

Interesting Professional Items. By N. N. S.....	56, 368
Notice.—United States Veterinary Medical Association	78, 374
Veterinary Practice for Sale.....	79, 160, 226, 384, 81C
Actinomycosis—Tuberculosis in the Dog and Cat.....	31C
The Norman or Cotentin Bovine Race. By Mr. Guillot.....	371
Assistant Wanted.....	384
Therapeutic Note.....	448
For Sale.—Light Veterinary Ambulance.....	656
Correction.....	737
Prescriptions.....	737, 738, 810
Assistantship Wanted	738, 810

	PAGE
News.—An Official Letter Relating to Tuberculosis.....	76
Sanitary Medicine.—Report of Chairman of Committee on Sanitary Science and Police. By Prof. J. J. Harger.....	118
New York Pasteur Institute.....	122
Fine Location for Sale.....	226
Situation Wanted.....	227

REVIEW OF BIOLOGY.

Upon the Morphological Value of Horns in Horses. By Mr. L. Blanc.....	305
The Existence of a Strychnizing Substance in the Muscles of Tetanic Animals. By N. H. J. Courmont and N. Dayon.....	307
Action of Tuberculine and of Malleine upon the Sudoral Secretion. By M. M. Cadiot and Roger.....	307
Pneumo-Bacilline as a Reactive Agent in Glanders. By M. S. Aroling.....	308
Some New Examples of Tuberculous Vaccination in Dogs. By M. M. J. Heri- court and Ch. Richet.....	308
Stamping out Tuberculosis.—Regulations Adopted by the Cattle Commissioners of Massachusetts.....	646

EXTRACTS FROM EXCHANGES.

State Cattle Killing.....	655
Contagious Diseases in France.....	656

SUNDRY CLIPS AND NOTE.

Trichina in the Horse.....	735
Method of Destroying Carcasses of Diseased Animals at Hamburg.....	736
Missouri State Board of Agriculture—Twenty-sixth Annual Report.....	737

GENERAL SUBJECTS.

The Human Body Consists of Numerous Magnets, Galvanic Batteries and Elec- trical Combinations. By G. Leo Hagenburger, M.S., D.V.S.....	773
The Real Value of the Medicinal Peroxide of Hydrogen Preparations Found in the Market. By H. Endemann, Ph.D.....	780

SUNDRY NEWS.

Tuberculosis in Short-Horns.....	382
Veterinary Organization in Turkey.....	382
Admission in German Veterinary Schools.....	382
Glanders in Cuba.....	383
A Commission for Investigating Tuberculosis Among Cattle.....	383

BIBLIOGRAPHY.

Hygiene of Domestic Animals. By H. Boucher.....	441
Précis de Pharmacie Vétérinaire pratique. By Mr. M. Ducassé.....	442
A Manual of General Histology. By W. S. Gottheil, M.D.....	442
Horses' Teeth. By W. H. Clark.....	442
Eighth and Ninth Annual Reports of the Bureau of Animal Industry, 1893.....	442
Bovine Prescriber. By James B. and Albert Gresswell.....	576
The Sheep: Management in Health and Disease. By G. Armatage, M.R.C.V.S.	577
Traite de l'age des Animaux Domestiques. By Prof. Chas. Cornevin and F. Liesbre.....	577

	PAGE
Traite de Obstetrique Vétérinaire. By F. St. Cyr and J. W. Violet.....	577
Pathology and Therapeutics of Domestic Animals. By Professor Friedburgers Friedberger and Fröhner.....	644
Journal of Comparative Pathology and Therapeutics—Edited by T. McFadyean, M.B.B.Sc., T.R.S.E.....	645
Lehrbuch der Pharmakologie für Thierärzte. By Dr. G. Nülbr.....	645
Advanced Agriculture. By Henry J. Webb, Ph.D., B.Sc.....	719
Every Man His Own Horse Doctor. By George Armatage, M.R.C.V.S. (Fifth edition.).....	720
Manual of Veterinary Microbiology. By Professors Mosselman and Liénaux....	721
Investigations Concerning Bovine Tuberculosis. Conducted Under Direction of Dr. E. Salmon.....	722
Production du Lait (The Milk Production). By Ch. Cornevin.....	723
Veterinary Therapeutics and Pharmacology. By E. Wallis Hoare, F.R.C.V.S..	861
Précis de Toxicologie Vétérinaire. By Prof. G. Mosselman and G. Hebrant....	862

BOOKS AND PAMPHLETS RECEIVED.

L'Age du Cheval et des principaux animaux domestiques. By Mr. M. Dumont.	443
Guide Pratique Vétérinaire, par Mr. J. A. Lacassin.....	443
Die Subcutane Myotomie des Schweifes bei Pferden. By Dr. P. R. Brüchert...	443
Castration du Cheval Cryptorchide. By Prof. P. J. Cadiot.....	443
La Pneumo Enterite septique des veaux. By Prof. V. Galtier.....	443
La Vie et l'énergie chez l'animal. By A. Chauveau.....	443
La Rage et les Moyens de s'en Preserver. By Prof. E. Nouved.....	443
La Malleine ses applications pratiques. By Prof. E. Nocard.....	443
La Tuberculose Bovine. By the same.....	443
Syllabus on Human Embryology. By W. P. Manton, M.D.....	578
Miscellaneous	723

EXCHANGES.

Journals.....	443, 578, 645, 723
Pamphlets.....	645
Sundries.....	723

AMERICAN VETERINARY REVIEW,

APRIL, 1894.

EDITORIAL.

AMERICAN VETERINARY REVIEW.—One year more has elapsed since the REVIEW was first presented to American veterinarians as a link of union, a means of communication between them, and as a friendly neutral ground for discussion and individual improvement; and now we are entering upon our eighteenth year. That age does not mean old, but a pretty robust constitution, considering what troubles had to be passed through, what obstacles had to be overcome. From a small number of about 400 pages in our junior issue, we have reached that of a volume of over 700, and from a limited edition, have arrived to one which justifies our greatest pretensions.

To our friends, our subscribers, we owe much, but to our *collaborators* our debt can never be paid—they are the life of a journal. From them comes the blood of interest which fills our pages, and to them our warmest thanks must for ever be given.

It is not our intention, however, to be satisfied with our past gains. Always watchful of the interests and the progress of the profession, we intend to maintain the position in American veterinary literature that we have achieved by careful attention to the objects of the REVIEW at its birthday. Our readers will learn with pleasure, we think, that special arrangements have been made to secure for the REVIEW original articles from some of the leading veterinarians at home and abroad, which will impose an increase in our monthly issue of eight pages, bringing our next volume to nearly 900 pages.

SIXTH INTERNATIONAL CONGRESS OF VETERINARY MEDICINE.—This important event, which was decided upon after the Congress of 1889, is to take place at Bern, in Switzerland, during the year 1895. We have received a notice from the committee of organization, a translation of which we present here to our readers. It may be thought by us Americans that this is an early step; but we cannot be judges of it, especially after our experience of last November.

The letter reads as follows :

“To the Veterinary Colleges, Professional Societies and to all Veterinarians of Every Country.

“GENTLEMEN AND HONORED COLLEAGUES:—At the close of the Fifth International Congress of Veterinary Medicine in 1889, it was decided that the next Congress should be held in 1894, in Switzerland, and that its organization was to be left in the hands of the Swiss members of the Fifth Congress.

“Following a report made by one of the members to the Swiss government, it has been decided that the Sixth International Veterinary Congress shall be held at Berne (Switzerland) in 1895, and the following committee was appointed: President, Colonel Potterat, chief army veterinarian; First Vice-President, Prof. H. Berdez, Director of the Veterinary School of Berne; Second Vice-President, Prof. Hirzel, President of the Swiss Veterinary Society at Zurich; Secretary, Prof. Noyer, of the school of Berne; Members, Messrs. Schindler of Glaris; Suter, of Diertal; Gillurd of Locle; Knusel of Lucerne, and Beretta of Lugano.”

Following this request made by the President and Secretary of the Committee of Organization for any suggestions or propositions of general interest that can be offered, and that will assist in the organization of a programme which will help the Sixth Congress to be equal, at heart, to those of Brussels and of Paris. We will, no doubt, receive more communications in relation to this important event, and will not fail to lay them before our readers.

VETERINARY EDUCATION.—This subject has been before the professors of America for a long while; it has been talked and talked over, suggestions after suggestions have been offered, papers after papers have been read before associations; and what has been the result? As far as we can see, to this day, nothing. By a resolution of Prof. Osgood, offered at the last meeting of the U. S. V. M. Association, a Committee on Veter-

inary Colleges, is to meet in a short while. But what will be done? Is it to be expected that a few veterinarians (members of the committee) can decide upon such an important question at one or at several meetings—all by themselves? What of the opinion of the veterinary profession at large? Why has not the subject been discussed outside of meeting rooms, faculty chambers, or friendly gatherings? We have time and again said to veterinarians of this continent that our pages are at their service; the subject is of enormous importance, and their opinions are of great value. Yet, notwithstanding all these calls, we have secured but one letter in answer, and that is only a promise of a future discussion of the question proposed at the Chicago meeting. It is five months since; but never mind; it will come from one who is most versed on the subject, and we are sure will be very valuable. To him we say, hurry up. To others, we repeat, let us hear from you, for until you do, “changes and improvements” can scarcely be looked for.

STILL ANOTHER.—The more the merrier, it is said. Let us wait a few days to see if the proverb is always true. The *United States College of Veterinary Surgeons* is announcing its first annual catalogue for the 1st of April.

ORIGINAL ARTICLES.

TYPHOID FEVER; OR, CONTAGIOUS INFLUENZA IN THE HORSE.

BY PROF. W. L. ZUILL, M.D.D.V.S.

DEFINITION.—Typhoid fever in the horse is a disease having many forms, and is propagated by infection and contagion. The disease always has similar general symptoms, even when accompanied by diversified local lesions affecting the respiratory and digestive organs, the nerve centers and lower portions of the extremities. It always assumes an enzootic form, and isolated cases are rarely if ever observed. It is due to this fact, that every one now admits the contagious nature of this disease, Prof. Trasbot of the veterinary school at Alfort, Paris, being the first to call attention to this fact.

SYNONYMS.—One of the oldest names of this disease is taken from the Italian, and called influenza, because it was then believed that certain atmospherical conditions was the cause of its spread and its infection. This term was appropriated, and used by the Germans, and from them passed into France. Some authors have confused typhoid with carbuncular fever or anthrax, and it is not unlikely that a superficial, and hurried examination, made some time after death, upon animals which had succumbed rapidly to this disease is responsible for this opinion. As soon as the symptomatology of this disease was well defined, the term typhoid fever was given to it. This name has created a great deal of criticism, but has nevertheless been retained. Objection has been made to its use because it indicated a similarity or identity with the disease of the same name in man. It is, however, not the same disease that is found in the human species, and is not transferable from one species to another. Typhus fever is a term that has been suggested by some writers as a name for this disease, but this would be still more objectionable, as it is a term already used to designate a contagious disease in the bovine species. Prof. Lafosse, of Toulouse, proposed to call the disease typhose, indicating a certain condition of stupefaction, or coma, but the term has not been accepted by the veterinary profession, and is seldom used. Typhohemia has also been used in this sense, to indicate a state of stupefaction of the organism due to a profound alteration of the blood, but I think I can show this to be incorrect when we come to review the pathological anatomy of the disease. Adeno catarrhal fever is a term which can only designate one of the rare forms of this condition. Bilious, hepatic, adynamic and ataxic fevers are also open to the same objections, and this is also true of such terms as epizooty, distemper, pink-eye and shipping fever; of these terms those which mean anything at all indicate only symptoms of the disease, rather than define its condition.

The term typhoid fever, although it might seem to indicate a similarity with the disease of the same name in man, yet is

the best that has been found. It will be seen that these two diseases are strangely similar in their general symptoms, most of which, from the very beginning, are almost identical; the intense fever noticed in man in the early stages of the disease is also well defined in the horse, and especially so if there be complications; this disease is also accompanied by a condition resembling drunkenness, stupefaction and debility, and probably, also, intense headache; the symptoms indicating this condition. While these symptoms are of far less importance in the horse than in man, they nevertheless show the marked resemblance between the two diseases. A large number of papers have been written upon this subject, but many of them are of little scientific value. In 1869, M. Salles presented to the Central Society of Veterinary Medicine, Paris, a competitive essay on this subject, containing much valuable and interesting information. In the year 1870, Bouley made a report on this disease, presenting some new and interesting facts, adding much to our knowledge of the subject, the symptomatology and pathological alterations being especially well studied.

ETIOLOGY.—The writings of the last twenty years tend to prove that this disease, typhoid fever, or influenza, is especially characteristic of the horse, and is confined to this species. It develops rapidly in young animals, approaching or a little past the age of full growth; it seldom occurs in old horses, and if at all is usually in a mild form. Here is another instance of the similarity of this disease to that of the human species, where the disease is chiefly seen in individuals about the age of twenty, while it is an exception in old persons and infants. It has not yet been determined that colts are not exempt from this disease, for the reason that they are seldom if ever confined in stables containing a large number of horses, and are away from the centers of infection, but it is not uncommon to find it in horses of from three to three and a half years old. Age, therefore, seems to be a predisposing cause, and when enforced idleness is added to this, the predisposition is greatly increased. M. Benjamin even goes so far as to deny the contagiousness of this

disease, even when he saw that when once introduced into a stable it spread rapidly, and almost exclusively, among young animals recently brought in, even when they were scattered among older ones. Overfeeding is also considered as a predisposing cause, from the fact that the disease may be seen in its worst form in overfed sale horses; while in underfed horses it assumes a relatively mild form. Some years ago, when typhoid fever was supposed to exist only in sporadic cases, it was quite satisfactorily explained by the over-exertion theory, especially as the products of tissue waste are found in the blood in generally increased proportion, represented by urea, creatin, creatine, etc.; but these causes are predisposing, not determining. This disease was never considered to be contagious in character until 1872, when Prof. Trasbot, director of the veterinary school at Alfort, expressed this opinion to the Central Society of Veterinary Medicine, which was rather severely criticised. M. Benjamin wrote an article on this subject, intended to demonstrate an opposite view, but the evidence produced was not of sufficient value to prove the correctness of the statement. During the spring of 1893, I was most forcibly impressed with the contagiousness of this disease, as I saw over forty cases in one of the large brewery stables in Philadelphia; the disease was brought in by the purchase of some fresh Canadian horses in April; these animals infected nearly 40 per cent. of the stable, and every animal affected was under eight years old.

Two other instances occurring at the same time, one in the stables of a well-known circus proprietor, who lost over 50 per cent. of his stock from this disease, the number of animals kept in the stable was about 75; the other instance was of a carter, who was almost ruined by the ravages of this disease, losing nearly three-fourths of his animals.

INOCULATION.—The contagious character of typhoid fever is now a well recognized fact, but up to the present time it has been a question as to whether or not typhoid fever was inoculable. Experiments made with the disease, to prove its transmission by inoculation, have by no means given satisfactory

results. The experiments have been made by inoculating blood taken at the beginning of the disease, but the results up to the present time are not such as would enable us to say that the disease can be transmitted in this way.

SYMPTOMS.—The disease becomes manifest after a period of from 4 to 7 days, is the opinion of Friedberger and Frohner, but this is a question I have not been able to determine positively from clinical observation, as I have found animals very sick in the morning that were in apparently perfect health the night before. The symptoms vary, however, according to the localization of the disease. Typhoid fever may run a very rapid course, one case occurring in my practice when the animal died within eighteen hours after the first clinical manifestation of the disease. In this case there was a rapid cerebral localization, which had a fatal termination before professional aid could be obtained, and in which was manifest an intense excitement and total paralysis.

Often there is localization upon special organs, followed by a rapid change which may speedily have a fatal termination; or, on the other hand, the change is a gradual one, accompanied either by a pleurisy, enteritis, pneumonia, pleuro-pneumonia, congestion of the spinal cord, anasarca, congestion of the podophyllous tissue, iritis, nephritis, hepatitis, cerebritis, and even complications of the heart and its envelopes, all of which complications I have more than once seen in my own clientage.

It is by no means uncommon to find a localization upon two or more organs simultaneously or successively.

When the disease is rapid in its evolution death speedily intervenes if proper care is not immediately given. Animals will pass from perfect health into profound stupefaction and coma in a few hours. They stand motionless in the stall, head down, ears drooping, and eyelids closed; they appear to have lost all tangible sensibility, and from the very beginning there is hyperaemia of the brain and cord. At intervals localized muscular tumors are seen in the region of chest, shoulders and thighs; they will stagger and reel from side to side, like a

drunken man, and almost fall while walking, owing to a loss of muscular coördination; this is the earliest manifestation of an interference with the functional activity of the cord; at the same time the general symptoms of the disease may be noticed. The conjunctival mucous membrane is almost tinged a greenish yellow, intermixed with a dull dark red, the yellowish tinge indicating a liver complication. The mucous membrane of the mouth is of a dark dull color, having a pasty, sticky feel, the tongue covered with a yellowish brown pus. The action of the heart is strong, tumultuous in character, and increased to 80 or 90 strokes per minute. The pulse is soft, weak and almost imperceptible, the respiration increased to 25 or 30 per minute, the lungs normal. The temperature rises quickly, and at the rectum registers 106° to 108° F. If blood is drawn in the early stage of the disease, it is often slobberish, but examinations show that it has all its physiological properties, it is dark when first drawn, but soon regains its color on exposure to the air. Coagulation is rapid, requiring but 5 or 6 minutes instead of 10 or 15 normally; the result is a clot with very little buffy coat. This precludes the idea of an alteration in the blood, rather indicating inflammatory changes. Vertigo and coma soon appear, interrupted from time to time by periods of excitement, symptoms of paralysis soon follow, and the animal falls to the ground, to be followed rapidly by death from asphyxia. These cases of rapid death may be seen in young, green plethoric horses, but no anthracoid changes can be found in the blood of these animals.

ORDINARY COURSE.—As a rule the disease follows a much slower course when the localization is upon some of the abdominal or thoracic organ; most frequent upon the digestive tract. Pneumonia and pleurisy are quite frequently seen; but complications of the spinal cord, with or without œdema of the extremities, is seldom noticed. It is almost certain that the disease will terminate favorably with any of these complications, especially after the first twelve or fourteen days. A very high fever is a marked symptom of the disease from the beginning,

and strikes one as being out of all proportion to the other symptoms. In influenza or typhoid fever the febrile symptoms decrease as the local manifestation becomes developed. A complete loss of appetite is one of the earliest symptoms, the patient refusing all kinds of food, but fresh cool drinks will be readily taken at any time, which can be taken advantage of for the administration of food. These animals are dull and sleepy, the head hangs in the manger, and facial expression is entirely wanting; there is a general constitutional depression, with an unsteady drunken gait.

The respirations are increased to 20 or 25 per minute, and the pulse to 70 or 80, while the action of the heart is extremely exaggerated. The temperature ranges quite high, with a marked coloration of the conjunctival and bucal mucous membrane. The eyelids are sometimes swollen and blinking, *with tears overflowing upon the cheeks (a pathognomonic symptom)*. These symptoms are soon followed by chills, and muscular tremors of the shoulders and thighs; when covered with a blanket the skin soon becomes warm and moist; at this stage of the disease no localization can be determined.

The blood contains quite a large proportion of fibrin, or plasma. Messrs. Gréhaut and Trasbot have found as much as 7 grains to the litre instead of 3 to 3½, the normal quantity. They find that the defibrinated blood, when exposed to air, will again coagulate, and that about 1 gram of fibrin may be again extracted from it. M. Gréhaut has ascertained that a large percentage of urea, creatine and creatinine is also present in the blood, and that the microscope shows nothing in the shape of foreign elements; the red corpuscles are intact, have not undergone changes or modifications; they agglutinate, and appear a little more sticky; there is an increase of white corpuscles, which is not specific, as similar modifications can be found in all inflammatory diseases. Other changes mentioned by some writers are merely post-mortem, and have tended to propagate errors concerning the disease.

LOCALIZATION UPON THE INTESTINES.—This is the usual

localization after the disease has reached a certain stage, and is sometimes manifested by constipation. The mouth is dry, the tongue clammy, no appetite, the dung small, dry and covered with varnish, but there are seldom false membranes on its surface. Often there are dull colicky pains, the animal continually pawing the ground; will lie down, rise up again, and appear to be greatly agitated. A violet-colored tint of the buccal mucous membrane is noticed, and by close examination a purple line is observed along the border of the gums, which is another pathonomonic symptom of the disease.

Occasionally an abundant serous diarrhœa comes on. The patients manifest an intense thirst, and rapidly loses flesh. If the fever continues, the patient will die in ten or twelve days. If, however, the diarrhœa can be controlled, the appetite will return together with other evidences of health. The alarming phenomena having disappeared, the patient recovers quickly, but for a long time will remain thin, poor, and incapable of doing his ordinary work. During the course of the disease, there is sometimes a serous œdematous infiltration into the dependent parts of the belly and legs; if mustard plasters have been applied to those parts, it is difficult to differentiate the character of the infiltration. This form of localization upon the digestive organs is the least serious, as the enteritis is usually of a mild character, and terminates in recovery.

Should the diarrhœa continue for any great length of time, very marked prostration will result, the patients can not be kept on their feet; they fall to the litter, and inflict upon themselves contusions and other injuries, which are very prone to terminate in putrid infection.

LOCALIZATION UPON THE RESPIRATORY ORGANS.—Pneumonia and enteritis often appear at the same time, and in such a complication it is clearly shown that we do not have to deal with a simple inflammation like that of an uncomplicated pneumonia, for then one disease would act as a revulsion to the other. It is not uncommon to find this condition complicated pleuritic involvement. The respirations become very much

accelerated, varying from 25 to 30 per minute. For two or three days the characteristic symptoms of pulmonary diseases are not noticed, the rusty discharges being almost always wanting. As a rule, the pneumonia begins low down, near the leg bronchus, and spreads from there slowly to the periphery. Normal sounds are heard on auscultation; percussion reveals a slight dullness in the middle, and lower part of the lung, whilst the resonance is retained in the anterior, posterior and superior parts. In the majority of cases, however, the dullness is not thus accurately limited and defined between fixed lines. A tubular breathing is not infrequently heard to the end of the disease, for the obstructed zones are surrounded by tissues permeable to air. In a certain number of cases the chest wall is not sensitive to percussion, while in others a very exaggerated sensitiveness is manifest, demonstrating the presence of a pleuropneumonia. *There are times, however, when the pleuritic complications will exist without any noticeable sensibility of the chest wall due to the marked depression of the nervous system with corresponding slight reaction.*

These symptoms, taken in their entirety, are slightly modified from what they usually are. This localization is serious, for it produces the greatest mortality. Some sudden complication ending in asphyxia is always possible. At a given moment the animal appears to grow better, but the next day pulmonary congestion may supervene, and death follow by asphyxia. Even without this complication of congestion, the pneumonia has a tendency to terminate in gangrene, the lungs grow tender in spots, the red mucous membrane now changes to violet color, the temperature rises suddenly to 107 3-5 F. (42 c.), and even more; there is a greyish clotted fetid discharge, always accompanied by rumblings in the bowels, and bronchial rales. Pleurisy may manifest itself at the outset, or follow later as a complication of the pneumonia. In this last condition death often comes on in the following manner: Pleurisy at first comes on slowly, suddenly there is an aggravation of the symptoms, and the animals die of asphyxia, either in consequence of the

very abundant transudation into the sac of the pleura, or by a spasm of the lungs complicating the pleuritics transudates. At other times the complication is very mild, and there is simply a catharrhal affection of the anterior portion of the respiratory tract, a bronchitis or a laryngitis. In this case the cough is thick, the discharges purulent, and accompanied by a serous infiltration into the inter-maxillary space, but which rarely run on to suppuration. Convalescence goes on regularly, and after five or six days the discharges become thicker and disappear. This form of disease is especially seen in old animals, and is accompanied with but little febrile disturbance.

LOCALIZATION UPON THE SPINAL CORD.—In the course of the disease, even with complications of enteritis, pleurisy and pneumonia, the animal is often struck with paralysis, falls to the ground and soon dies. In rare cases the congestion is arrested at the lumbar plexus. M. Trasbot has noticed but a single case in a horse presenting symptoms of enteritis, pneumonia and pleurisy. This patient remained paralyzed in the hind quarters for 24 hours, and there was a total suppression of sensibility and motion.

LOCALIZATION UPON THE FEET.—Founder is a very rare complication, but remarkable instances have been cited of this localization coming on 12 or 24 hours after the appearance of the first symptoms. It is impossible to move the foudered animal, there is extreme sensibility, and great heat of the hoof, walking is impossible, the animal supporting his weight upon his heels. Added to this an intense fever superinduced by the sufferings of the animal.

ANASARCA.—Anasarca is frequently a complication, not at all influenced by the localization of the disease. These infiltrations which are usually noticed, increase, and there are produced lesions much resembling those of purpura-haemorrhagica. As in this disease the infiltration of the connective tissue of the extremities may so distend the skin as to produce fissures at the folds of the articulations. This complication usually occurs with very young animals from 3 to 4 years old. A moderate infiltration

of the dependent parts is a favorable symptom, and should not be confounded with purpura-haemorrhagica.

OTHER COMPLICATIONS.—It occasionally happens that other irregular complications supervene to cause the death of the animal, one instance brought to my notice by a consultation, in which there was an intense nephritis, with an enormous hyper-secretion of urine, the animal having recovered from all other evidences of the disease but this, which could not be controlled, and which terminated fatally in a few weeks. Another instance in my own practice, when the animal entirely recovered with the exception of a small, weak, rapid, intermittent pulse, which could not be influenced by drugs, and which terminated in death a few weeks after apparent convalescence. Haemorrhagic Iritis is not unfrequent after complication of this disease, but which usually yields readily to ordinary treatment, the reabsorption requiring from two to three weeks. Plastic iritis is occasionally seen in this disease after an apparently complete convalescence. These complications develop rapidly, and an animal which in the evening was, to all intents and purposes, perfectly sound, is found in the morning entirely sightless.

(To be Continued.)

MEAT INSPECTION.

THE IMPORTANCE OF GENERALIZATION AND UNIFORM REGULATIONS FOR THE INSPECTION OF MEAT IN ALL COUNTRIES.

BY MR. CHAS. MOROT, Municipal Veterinarian, Troyes, France.

“Les meilleures institutions sont soumises a des lenteurs et à des ménagements, parce que le bien n'est jamais aussi prompt, aussi aisé que le mal.”

(Mereier—Tableaux de Paris, Vol. 1, page 131, Amsterdam, 1782.)*

The first American Veterinary Congress has included in its programme the question of the sanitary inspection of food of

* The best institutions are subject to delays and obstructions in their progress, because doing good is never so easy and quick a process as doing evil.

animal origin, imitating in this its European predecessors of 1869 (Zurich), and 1889 (Paris). There is a proof in this that in young America, as well as in old Europe, this important subject of public hygiene is not considered in a narrow or local spirit, or from the exclusive point of view of a single locality or region, without reference to the policy or the interests in the matter of other regions or communities. Each nation will of course be influenced by its own specific and characteristic traditions, and its special personalities; but, as said M. Mille-
rand, it is not any longer possible for them to continue to be shut in by their own boundary lines without giving due weight to the customs, opinions, and laws of their neighbors. An absolute necessity, in my opinion, lies upon each country to occupy itself with the foreign regulations of the trade in alimentary substances.

These regulations must be studied in full, and minutely compared, in order to make them a basis for reciprocal exchanges and advantageous modifications. They must thus amalgamate together, and to a certain extent become identical, in order to become at least uniform in their general outlines.

The examinations at home of these regulations, will also be very advantageous. From an economic and hygienic point of view, a country would derive much benefit from sending delegates occasionally to others, to learn by ocular observation the abattoirs, slaughter-houses, markets, etc., with their methods, and to investigate the condition of the various organs of the animals treated by them, with the appliances in use and modes of working of these establishments, and their methods of inspection, including the nature of the meat condemned, and the sale of some specified meats, etc., etc. Such studies by these delegates would constitute very instructive object lessons of facts, while there are in existence so many practices in common application in one country which are considered impracticable, and repudiated in another, for the simple reason that they are unknown or have never been understood. These international methods of improving the commercial and sanitary police of

human food seem to me to be the only ones by which the existing diversities and inconsistencies and more or less exaggerated and prejudiced modes of action can be brought to an end. I can see no way more likely to definitely abolish existing confusions and collisions of mutual interests, whether originating in indifference, or ignorance, or in improper complications.

The flesh of domestic animals being by far the most important food of animal origin, it necessarily follows that the attention of hygienists of various epochs has always been specially directed to its quality and modes of preparation and use.

Among the more civilized ancient nations, the sanitary police of food was first placed under the surveillance of the religious orders, as we see it at the present time amongst the Jews and the modern Musselmen. Thus, Moses, St. Paul, Mahomet, St. Theodore of Canterbury, and others, in their religious regulations, treated of the salubrity of food as well as upon ethical principles. Subsequently, as the times progressed in knowledge, side by side with the religious or sacred ordinances came the study of civil or laic alimentary hygiene. This state of things underwent a marvelous development toward the middle ages, in most of the countries of Europe, notably in France, Belgium, Italy, Germany, etc., and to a great number of localities, and large and small towns of various importance, local administrations, township, incorporated authorities, and trade corporations, stringent hygienic ordinances were adopted and more or less strictly enforced.

Augustin Thierry describes with admiration the efforts of France in the middle ages in favor of hygiene and public salubrity. He does not forget to state that as early as in the thirteenth century there was a common abattoir at Amiens, and he does not hesitate to say that the study of the measures taken by our ancestors for the corporal welfare of the people contain an important amount of most instructive information for even the scientists of to-day.*

*A. Thierry—*Essai sur l'histoire du Tiers—Etat*, Edition in 12, Paris, 1868, pp. 465 to 467.

The revolution of 1789 brought with the suppression of the corporations into France, the abolition of the old regulations suggested by experience to prevent the abuses of the butcher trade. From this date, as affirmed by the celebrated hygienist Foderé, in 1813,* butchers no longer obeyed the regulations, and knew no others aside from their own will; they opened slaughter-houses all over, and being no longer watched, ignored, especially in small towns, all rules of salubrity; hence the necessity of renewing the above regulations by force, and of re-establishing the functions of inspector of butcheries, a function which in fact is in large cities entrusted to police agents, but which is left entirely to the direction of the butchers in towns of the third and fourth order, to the great detriment of the citizens. In 1885, Delachenal regretted, as had Foderé, the disappearance of the police measures of the middle ages in relation to butcherics and bakeries. He said: "Some of those old regulations ought to be re-enforced, since, through the neglect of their enforcement, the old abuses which they were intended to remedy have been able more vigorously to resist the influence of time.†

It is to be deplored that in our progressive epoch we are at times compelled to look back regretfully upon the hygiene of the old times, instead of being able to recognize all around us no only the continued existence of the former sanitary food police, but also its adaptation to the exigencies of modern science, the existing customs, and the territorial and political organizations of the various countries.

Owing to the almost complete absence during the middle ages of scientific data upon the pathology of animals used for food, it is easy to understand why the inspection of meat was entrusted exclusively to persons familiar only with abattoir work, or to mere police employees. But that which is less easily understood is that in some countries, especially in France,

*Dr, Foderé—*Traité de Medecine Légale*, Vol. vi., Paris, 1813, p. 291.

†*Bulletin de l'Académie, Delphinale*, Vol. xx., 1885, Grenoble, 1886, p. 300.

more than a century after the foundation of the schools by Bourgelat, veterinarians have ever been, except on some occasions, and almost by accident, called upon to serve as meat inspectors. Then, when an inspection was required, it was generally left to the customs officers, supervisors of slaughterhouses, butchers, and the like. Within a period of less than thirty years, Paris did not count a single veterinarian on the inspecting staff; and Lyons, the second city of France, was in the same condition. It was only within a few years that in France the functions of its inspectors has been entrusted to veterinarians. And still, though the larger cities may have veterinarian meat inspectors, many of the smaller cities have none, and the case is still worse with the smaller towns. Belgium, Luxemburg, Spain, Italy, Switzerland, Russia and Germany have inspectors in the large cities, and some are found in Roumania, Russia, Bulgaria, Portugal and Holland. In Great Britain there are a few. In Greece, Athens is the only place where they exist.

The work of meat inspectors rests ordinarily upon official regulations. These are governmental, provincial, departmental or communal, or such as are applicable to the various localities from which they are paid. The governmental jurisdiction, as in Bulgaria, applies to the entire country; it may connect with other bodies, as in Belgium, Spain, Italy, Roumania, Luxemburg, Switzerland and some German states. Russia exercises a governmental supervision, while Portugal and Great Britain have only sectional (communal) regulations.

Communal regulations are the least satisfactory in their results, as in many instances they are only partially enforced for lack of the prestige of the supreme central power. Provincial and departmental regulations have the advantage of originating in a somewhat higher source, which guarantees a somewhat better enforcement, but yet are not without objections. On the other hand, a wise governmental law seems to realize all the necessary conditions for a perfect meat inspection, by reason of its being better generalized, more uniform,

and springing from the highest authority. It must be enforced by veterinarians only, or in their absence, by special agents under general veterinarian jurisdiction.

Each community must provide for the execution of the requirements indicated, and it is essential that the Government shall have a specified list of the principal conditions which justify the condemnation of the meat, although a certain amount of discretion is allowed to the veterinarian in the formation of his judgment. Similar schedules of diseased conditions are required by the laws of Belgium, Italy, Roumania and Switzerland;* and in some parts of Austria, Bavaria, France and Portugal.

In the majority of the European nations, where the inspection of meats is neglected, an important movement is now in process of organization, having in view of a governmental supervision, under obligatory laws, of a co-operative character, and in other of the States already having a system of police, though not well organized, action is to be taken to effect an improvement in their present code. In Roumania the veterinarians have obtained a general law on the subject by demonstrating to the proper authorities its necessity and importance. Italian and Belgium veterinarians, through the efforts of their societies, and as one of the fruits of the Congresses of Bruselles (1880) Bologna (1879) and Milan (1881), have accomplished the same result. It may be presumed that the veterinarians of Germany and Austria will co-operate in a movement in the same direction, through the influence of the Congresses of Cassel (1876), Nuremberg (1891), and Vienna (1892). French veterinarians have worked hard in the Congresses of Paris (1878, 1885, 1889) and through their societies, and they are hoping to see the realization of their expectations at an early period.

*The list of meats unfit for human consumption was not overlooked in the proposal of Governmental regulations offered at the Veterinary Congresses of Milan (1881), Vienna (1892), and those of Bulgaria and Germany. It has also been considered by the veterinarians of the Aube Society and that of the Grand Conseil des Veterinaires in 1892.

I hope that the *International Veterinary Congress of America* of 1893, following the example of predecessors, will issue a forcible and effectual appeal in favor of a system of meat inspection *of which generalization, obligation and uniformity* shall be the essential features, to be carried into effect through members of the veterinary profession under the prestige and sanction of governmental authority and regulation. If our colleagues on the other side of the Atlantic will but follow the road to success which has thus been already traced by their European brethren, they can hardly fail to obtain the desired regulations, greatly to the benefit of the interests of the public hygiene, and the more extended utilization of their professional influence and qualification. Should they succeed they will have worked well, not alone for their own country, but in rendering the aid of their good example to those who are still clinging to prejudices and errors of the old system—which was not a system, and the old doing—which was not doing, but rather the leaving undone that which is so well worth doing in the best manner possible.

A VARIETY OF PRACTICAL CASES.

BY J. D. FAIR, D.V.S., Berlin, Ohio.

A Paper read before the Ohio State Veterinary Medical Association, Jan. 10, 1894.

When our worthy president requested me to prepare a paper for our annual meeting I consented to do it without giving it a second thought; I soon commenced to think, what will I select for my subject: Azoturia? No. Parturient apoplexy? No. Have you anything new? No. Do you know anything new? No. I finally concluded to write on a subject—or rather report, a few cases which came under my observation during the past summer, not expecting you to gain any great amount of knowledge from the paper itself, but I merely wish to open the way for discussion and reporting of similar cases.

What are we going to say to an owner and how are we going to treat them?

When we are called to see a patient we are expected to make a diagnosis, or, at least, give our opinion. When we are not able to make a positive diagnosis, our opinion to the owner should not be very elaborate; but give it as few words as possible. There is such a thing as not saying enough, but the probabilities are we say too much. Where to draw this line we must determine by our judgment of human nature. In obscure cases, cases that assume a contagious or infectious character, or where we are asked to give a final opinion, I think we should be guarded in that opinion, and, if possible, call counsel. In many cases we lose credit, we divide honors, but censure will be just the same. I am frequently called to see cases of fractures. Fractures of the bones of the extremities have proven very unsatisfactory to me in my practice. In cattle I have had good success. The point I wish you to discuss is! Is it advisable to treat simple fractures of the bones of the extremities when occurring in good or ordinary horses? What are you going to advise the owner?

Not very long ago I was called to see a Short-horn registered cow. The history of the case was as follows: The cow was placed in the stall in the evening on a ground floor and left as usual. In the morning when the owner found her she was down in the stall in the usual sitting position, and not able to get up. He made several attempts to get her up but failed. I was called to see her, and we got her out of the stall, and, with the help of a dog, we tried to get her up, but she could not stand. I soon discovered that the trouble was limited to the right hind leg. She could flex and extend the leg, no shortness, no external prominence, no crook nor angle. I moved the leg and could not detect any crepitation. I made an examination per rectum and per vagina. I thought everything was normal. Now what are you going to say to the owner? I made a guess—Dislocation of the coxo-femoral articulation—and explained what that meant, and the owner said: "What can you do for her?" I answered, "Nothing." "Then destroy her, and we will see whether you are right." The owner and

several good men present, a valuable cow, having very heavy quarters; looked well, ate well, first visit, and considering that cows are very stubborn when assisting them in getting up, taking everything into consideration, I felt somewhat embarrassed. We killed her and made a post-mortem. I immediately cut down for the articulation, and found a rupture of the coxo-femoral ligament and a dislocation. The head of the femur slipped under the anterior border of the ilium, and this accounted for no shortness nor the usual external prominence. We have had cases of dislocation before, but were in cows in ordinary flesh, and could make a diagnosis by external appearance and sense of touch. Simple fractures of the bones of the extremities in cows always adjust, and have good results.

Fractures in the horse, especially if compound, I don't pretend to treat, and think it of no avail; and to destroy them the proper thing to do. In fact, single fractures have not been very successful in my practice. A single fracture of the bones of the pelvis, if there is no particular displacement, make fair recoveries. I treat fractures in the usual way, place them in slings, correct the displacement, apply a bandage, cut pieces of paste-board and soak them in water, apply over the bandage, next another bandage, next splints, starch bandage, plaster of Paris bandage, etc. But the majority do no good again we say. What is the proper thing to say to the owner?

We will now relate to you two very similar cases which came under my observation during the past summer.

Case No. 1 was a gray mare, 14 years old, 15 hands high, weighing about 1,100 pounds, a good family mare, belonging to an old lady. This mare was really worshipped by her owner and her daughters. and was considered a member of the family.

The history of the case was as follows: She was used nearly every day in the buggy, and one day when driven by one of the daughters, she noticed an unsteady gait, but made her drive. The next morning I was called to see her, and not being at home, my student answered the call, who considered the trouble a light attack of azoturia. I saw her the next morning, and

made an examination, and, from the history and symptoms, concluded that she was not suffering with azoturia, but had some spinal trouble. Pressure of some kind, degeneration, scirrhosis, some disease of the spinal cord, the exact nature of which I did not know. Temperature and pulse normal, good appetite, urine a little scanty, high colored, containing lots of sediment and a little flakey; a chemical test showed no albumen nor sugar. I made an examination per rectum and vagina, thought she might have an aneurism of the posterior aorta or melanotic deposit pressing on the sacro-lumbar flexus, or a suppurative kidney; but, as far as I could feel, everything seemed normal, except that the left iliac artery did not pulsate as strongly as the right, and the left extremity was a little œdematous. We noticed small melanotic deposits around the anus and vulvæ, but from my examination I could not make a positive diagnosis. I had an opinion of the case, but what are you going to say to the family? They were very anxious to know whether Flora would get well again, and how soon. In this case I advised treatment, and thought that there were some chances of recovery. I gave her a mild cathartic, diuretics, and placed her in slings. After the cathartic had operated, I placed her under strychnia and iodide of potash.

This treatment was continued for two months, gradually increasing the strychnina until their physiological actions were observed. At the end of two month's treatment, there was very little improvement. The treatment was then discontinued for one week, and by that time she had lost all control of her posterior extremities. I then advised the old lady to have her destroyed. This was done, and a post-mortem made. On removing the anterior extremity and exposing the viscera, I found a number of melanotic tumors, none of them causing any particular trouble. The kidneys, liver and spleen seemed all right; no pressure on the sacro-lumbar flexus. In the left iliac I found a melanotic deposit that partly cut off the circulation; this accounted for the limited pulsation and the œdema of the leg. I made sections of the spinal column and anterior to the sacro-

lumbar flexus, at the articulation I found an excavation: a hole in the spinal canal, and there was an extensive melanotic deposit extending all around the cord, passing on it and producing the paralysis.

Case No. 2 was a gray mare, eight years old, 16½ hands high, weighing about 1,700 pounds, a well-bred Norman, and in foal. She was owned by a well-to-do farmer, who gave us the history as follows: The mare was all right a few days before; he had driven and worked her, and she seemed to be all right; but the day before when he led her to water, he noticed that she staggered, not only behind, but in front as well. She eats well, drinks well, laid down, but it was difficult for her to get up. I made an examination; found temperature and pulse normal; no soreness in the regions of the loins; examination per rectum and vagina revealed everything normal; a few melanotic tumors on vulva and anus. The mare had good horse sense, but had lost control of the locomotory apparatus.

I related several cases to the owner, which had occurred in my practice. She was a good mare, and he requested me to treat her. I prescribed same treatment as in Case No. 1. Continuing this treatment for one week, when I noticed she could hardly stand, so put her out of slings for one day and then raised her again; but she seemed relaxed and not able to stand. I advised owner to destroy her, and on post-mortem found the same condition as in Case No. 1, only the deposit was in the cervical region, anterior to the brachial plexus, producing paralysis of the anterior extremities as well as the posterior.

Gentlemen, I have had two other cases, gray mares showing the same symptoms; unsteady gait; no constitutional disturbance; required the use of slings, and those two cases made good recoveries, and in a short time a month to six weeks. Those cases have been misleading to me; sudden in attack, not coming on gradually, and the symptoms accordingly. What are you going to say to the owner, and how are you going to treat them?

I will report two similar cases that occurred in my practice

during the past summer. Two extensive farmers, neighbors, having good barns and keeping quite a number of horses, they had a siege of sickness among them which assumed a contagious form. Those cases gave me a great deal of trouble, not thinking them to be contagious myself, but the owners and the community in general did. Mr. B. called at my office and requested me to come to his place to see a gray colt, one year old, that was down and not able to get up. The colt was in a large roomy stall, had gotten down during the night, was laying flat on its side, and apparently not able to raise its head. Temperature 103° ; pulse 72; thin in flesh, and lousy. We turned the colt, put slings under it, and raised it, applying smart friction to its body and legs until it was able to stand; took some water and grains. I noticed some difficulty in deglutition, but thought it a case of general debility and a little sore throat; prescribed for the colt, and left it to see it again the next morning. When called the next morning I found another one down, and the owner called my attention to several others that seemed to have sore throat. At this visit I concluded I had something more serious to deal with than sore throat, and made a more thorough examination and concluded I had a stable full of cerebro-spinal meningitis. This man had a silœ in his barn and was feeding ensilage to all his stock. This was in May and we had lots of rain at that time: some of the stock would eat the ensilage while others would not, and it would lay in the mangers and would get sour and very offensive. I gave my opinion of the trouble, and advised the man to change his feed and horses. He was very slow in doing it. A fine roan mare, belonging to another man, took the disease and was treated by a quack, who thought the trouble very simple, only an inflammation of the lining membranes of the œsophagus, and said he had lots of them, and they all got well.

The owner of the roan mare consulted me about the trouble, and I told him his good mare was very sick and was going to die. She could get up by assisting her, but had complete paralysis of the pharynx. She died. I suggested to the owners

that we call counsel and dispense with the quack. We called my friend Dr. Derr. We consulted, agree on the diagnosis and cause; made out a course of treatment, and three out of eight cases died, while five made good recoveries.

We had the barn thoroughly cleaned—disinfected, fumigated, etc., then placed the sick in good clean stalls, supported them with slings, placed them on a laxative diet, prescribed for all the horses hyposulphide of soda in their drinking water, cold applications to the heads of the sick, and the following prescriptions were used in general, modified and given at such intervals as the cases demanded: Potassii Bromide. Ext. Ergot, Fluidi. Ext. Belladonæ or Spiritus Ammonii Aromatici. Spiritus Ætheris Nitrosi. Strychina Sulphatis. Spiritus Vinii Rectificate.

Strong stimulating liniment to their backs, well rubbed. After the acute stage passed, we put them on potassium iodide and strychnia.

Those cases that had complete paralysis of the pharynx we medicated and fed per rectum, and some hypodermically; they all died. Those that had partial paralysis could take nourishment, get up with the use of the slings; made good recoveries, and two of them of them were sold to dealers this winter.

On December 3d, I was called to Mr. M's, a neighbor to the gentleman where we had the cases of cerebro-spinal meningitis, to see a gray gelding, rolling and tumbling with intestinal pain. This man had a lot of horses, all stabled in a splendid barn, clean and well ventilated. The horses were having a light attack of influenza or distemper. I examined the gray gelding; found an elevation of temperature, pulse high and weak; noticed some swelling of the legs and sheath, but gave this no particular consideration. The patient seemed very uneasy, would lie down, walk around the stall, and I concluded I had a case of enteritis, and expressed myself so to the owner. The owner took me to another stable and showed me three others, saying that their legs and bellies commenced to swell the day before. I saw the characteristic swelling; dilated their nostrils; went back to the other stable, looked at one that was rolling, and

found that I had four cases of purpura hæmorrhagica, and so informed the owner. This frightened him; said he never heard of such a disease, and it must be contagious. I could not make him believe differently. They were four good confirmed cases of purpura, some of them smelled terribly, and on the third visit the owner showed me another case. This made the owner feel more confident than ever that the disease was a new one, and certainly contagious.

What are you going to say to the owner? What are you going to do for them?

I said nothing; went on and gave them the following treatment:

I placed those horses in good box-stalls, gave them plenty of air and kept everything clean. The one that was rolling and suffering great pain, I gave a hypodermic of sulphate of morphia and plenty of turpentine emulsion, alternated with Ext. Ergot. Fludi. Ext. Digitalis and Tinct. Opii.

By morning the swelling was limited to the legs, head and sheath, and was resting easy. I started the others with a four-drachm aloetic pill, and during the past two years have adopted the following treatment: Chlorate of potash in their drinking water, emulsion of turpentine if necessary, and the following preparation given every six hours: Ferri Sulphatis. Aqua Dist. Sulphate Strychnia and Sulphate Quinine.

This makes a very nice solution, and I think if we consider the pathology of the disease, this combination meets the indications as well as any preparation we can prepare. Now, gentlemen, you have heard my opinion and treatment of those diseases, and I hope and trust you will all fully express your opinions and experience. Criticise my wrong doing, so that I may learn, for where ignorance is bliss, 'tis folly to be wise.

NOTES ON THE METHOD OF SPAYING BITCHES.

BY DR. M. FRANCIS, V.S., College Station, Texas.

In looking over the literature in English on this subject, the writer has found very little of value to guide the young or inexperienced practitioner. Before proceeding, I must stop a moment to heartily endorse Prof. Wesley Mills' remarks on the propriety and usefulness of the operation. The public, however, demand it, and so far as the writer is concerned, they shall have it. Without further remarks I shall describe a method that has given us very satisfactory results.

REQUIREMENTS. — 1—Sharp convex bistoury. 1—Scissors. 1—Dressing forceps, *curved jaws*, scissor handles. —Dressing forceps, *straight jaws*, scissor handles. 2—curved needles, No. 6 or No. 7. Woven silk thread, No. 12 or No. 13. Several surgical sponges. Antiseptic solution. Anæsthetic mixture. Inhaler. Iodoform ointment. One assistant.

The subject should be kept on a limited diet for twenty-four hours preceding the operation. The hour for the operation having arrived, the operator washes his hands *thoroughly*, giving the nails special attention. The assistant places the animal on her side, with her back toward him, on a table of ordinary height, loosens or removes the collar if present and holds both forelegs with one hand, and both hind legs with the other hand.

The anæsthetic is given. I have tried chloroform, ether and a mixture of them. I greatly prefer the latter. I think I noticed it in Gresswell's work. It is the most satisfactory I have ever tried. It contains: Chloroform, 20 pints; Ether, 80 pints.

Having tried several inhalers we have found a conical glass percolator, such as every druggist uses, the most convenient. The quart size is suitable for ordinary animals. Large ones require the two quart size. The anæsthetic is poured on a sponge placed in the percolator, and the animal's nose held inside. The thumb of the operator's left hand is placed over the neck of the percolator, and the right hand is placed on the back of the neck

of the dog, to retain the head. The percolator being of glass, allows the operator to see how matters progress inside of it. The dog usually howls and struggles considerably at first, but soon quiets down into an unconscious condition. It is probably wise before giving the anæsthetic to have the hostler give the dog a short walk out-of-doors, to give her an opportunity to empty the rectum and bladder, otherwise she is liable to do so while the anæsthetic is being given. The bitch is now hung up by the hind legs.

We have found the following method convenient: Have a door about three by six feet, place this on end, leaning from you at an angle of about ten degrees. Drive two strong nails near the top about two feet apart. Take a cord or piece of tick bandage three and a half feet long and make slip knot in each end of it. Place the legs through the loops and draw tightly around the lower portion of the tibial region. The animal is then suspended by placing the cord over the nails mentioned above. It will be readily understood that these arrangements have been made before the operation began. We have found this preferable to having the nails driven into the wall as it allows shifting to secure desired light. The operator rinses his hands in a baisen of the antiseptic solution. The instruments have been placed in a similar vessel of the solution before the operation began. We use a two per cent. solution of creoline, lysol or thyme-creysol for this purpose. Each has given satisfaction. The operation is now performed in three steps.

FIRST STEP.—Sponge the abdomen thoroughly from the pubes to the sternum with the antiseptic, throw the sponge aside. Open the abdomen with the convex bistoury in the median line, the lower end of the incision should come to the umbilicus.

SECOND STEP.—On examining the cavity the ovaries will readily be found. Secure one by the ligament, with the forceps having curved jaws, lock the handles. With the other forceps remove the organ by torsion. Repeat with the other ovary. We have never found ligatures necessary.

THIRD STEP.—Close the abdomen with two sutures of woven silk tied rather loosely with square knots. Clip the ends of the thread with the scissors. Apply iodoform ointment freely. Remove the cord and lay the animal aside to regain consciousness. We have abandoned bandages of all description. The diet should consist of sweet milk for a day or two ; afterward the usual diet may be allowed. Remove the sutures about the fourth or fifth day.

REMARKS.—It will be noticed by reviewing the operation that the instruments are used but once, that is, the sponge, bistoury, forceps, needles, etc., after being used are laid aside and not returned to the antiseptic, to create confusion or the probability of infection. The abdominal muscles will be tense if the patient is heavy ; the assistant overcomes this by raising the fore legs while the ovaries are being sought.

CONTRA-INDICATION.—Œstrum, pregnancy and lactation.

In one case the operation was performed under protest during œstrum, resulting in peritonitis, which proved fatal. This was the only case lost during a period of five years.

If on opening the abdomen the animal be pregnant, it is perhaps best to close the wound and postpone the operation indefinitely.

ESERINE.

By R. P. STEDDON, V. S., Galesburg, Illinois.

A Paper read before the Eleventh Annual Meeting of the Illinois State Veterinary Medical Association.

In the very great majority of so-called bowel troubles which come to our observation, the predominating cause is torpidity of some portion of some portion of the alimentary tract or its appendages, resulting from or induced by dietetic errors, or, what is very frequent, the inability of the animal to properly masticate, or the natural propensity of bolting the food. How often we have seen animals suffering the agonies of death regurgitating gases from the stomach, the abdominal walls distended to

their full capacity, no audible intestinal sound save that of the displacement of the inflated bowel by the diaphragm in the short shallow inspiration; here we have the entire tract participating in the torpidity which assumes temporary paralysis. Again, in impaction of the various portions of the tract, in the numerous forms of indigestion, constipation and nearly all forms denominated colic, this same torpidity, mild or severe, as the case may be, is directly accountable for the lesion. In acute indigestion, especially, there is a demand for hasty action and immediate relief, otherwise the patient will succumb to its deadly effects, viz.: rupture, absorption of gases, or resulting inflammatory action; in this form of indigestion, and, in fact, in any of the disorders above mentioned, there is no agent so effectuous in restoring normal action and condition as eserine properly administered. Of the various preparations of eserine the sulphate is preferable, which should always be obtained in sealed glass tubes; in preparing a solution the mistake is almost universal of using water with the addition of boric or salicylic acid, or some allied agent with a view of preserving the drug; when water is employed in such solution, after a short time the drug begins to deteriorate, which change is ordinarily indicated by it assuming a reddish tinge, and after a few weeks its action is extremely uncertain, thus rendering it useless, and its administration, after having undergone such change, being followed by no good results. Eserine is denounced as eminently unreliable and having no right to a place in the list of curative agents—a faulty preparation of a most valuable drug—and the advocates of its use will be attacked and even abused because they dare claim any virtue for it. The best vehicle for eserine for our use is pure alcohol in the proportion of three (3) drams of alcohol to one (1) grain of eserine; thus we are insured a perfect solution and immunity from deterioration for the greatest time; the precaution should also be taken to protect it from light by colored-glass bottles, or by wrapping in dark paper. Eserine should always be given hypodermically or intratracheally when practicable, diluting the above solution with an equal amount of

water. However, in those cases of sub-acute indigestion, in impactions, constipation or any of those conditions of torpidity where the symptoms are not urgent and the constant presence of the veterinarian not required, it may be given per orem during his absence, always sufficiently diluted to prevent the alcohol from attacking the mucous membranes. The dose of eserine is from $\frac{1}{4}$ to $\frac{3}{4}$ grain. One dram of the above solution is a safe and usually effective dose for an animal of 1,000 pounds. In fifteen minutes after the administration of a full dose, there is slight uneasiness, colicky pains, loud intestinal murmurs, followed by passages of flatus and fæces; after an hour its effect gradually subsides during the succeeding two hours. It should always be used cautiously in pregnant animals, as during this period the uterus is highly sensitive and the muscular walls more susceptible to its stimulating action. The use of eserine has entirely revolutionized the treatment of these bowel affections. Those obstinate "all night" cases are now brought to a sudden and satisfactory termination in one hour, paracentesis of the colon is very seldom performed, passing the probang to relieve gastric distention is out of date, and of eserine it may truly be said, it is Nature's remedy.

SYMPTOMS AND TREATMENT OF DISEASES FOLLOWING PARTURITION.

BY DR. A. G. ALVERSON, Bloomington, Ill.

A Paper read before the Illinois State Veterinary Medical Association.

Under this heading I shall confine myself to the mare and cow, and, of course, shall not touch in the class of accidents.

METRITIS.—In the mare this disease is considered by many authentic writers quite a serious disease; especially Fleming, in reading which one would be led to give a serious outlook to every well-developed case of inflamed womb.

Symptoms.—Quite often the first symptoms are those of colicky pain. Then a discharge from the vagina, with a more

or less fetor appears. Breathing quickened, temperature elevated, pulse accelerated, drawn up in flanks, and pain on pressure in that region. Symptoms come on in from one to five days after foaling. An examination per vagina, finds the womb placid, hot to the touch, and containing some liquid or semi-liquid material. In some cases the inflammatory process extends to the feet, and the animal is very stiff and sore from inflamed laminæ tissue.

Treatment.—First with the hand or a sponge take all foreign material from the uterus. Then inject lukewarm water containing one teaspoonful of carbolic acid to a quart of water; this to be repeated two or three times a day. When the feet are affected, cold applications locally are indicated, and sacks containing ice bandaged on the feet act nicely. In cases where the discharges are very fetid, I have used permanganate solution in place of carbolic acid, with good results. Administer internally quinine or cinchonoid solution to allay fever, and, when animal seems very weak, give alcohol or spirits of nitrous ether in drinking water.

PARTURIENT ECLAMPSIA IN MARE.—Comparatively seldom seen, and then not always recognized.

Symptoms resemble quite closely those of tetanus. They are shown in from two or three weeks to as many months after foaling; usually when the surroundings of the mare are changed, as when taken from pasture and put at work, or shut up in some strange place with the colt, the worry seeming to be an important factor in the cause. The symptoms, while like those of tetanus, will admit of some distinction. It will run a more definite course; the jaws are never as closely set as in acute tetanus. The muscular contractions and consequent phenomena at the eye are not nearly so apparent, and, in fact, the muscular contractions generally over the body are not as tonic as in acute tetanus, and an acute attack of tetanus is the form eclampsia most resembles.

Treatment.—Free blood-letting, about two gallons, varied with the size of animal, followed by large and repeated doses

of fluid extract of belladonna and canabis indica, serve quite successful in cases where attention is given soon, recovering in from four to eight hours. Fatal cases occur in ten to twenty-four hours.

In the cow metritis is not a very serious trouble, and usually yields readily to some of the treatment for same in the mare. Thorough cleansing of the uterus with aseptic injections being all that is necessary in many cases.

PARTURIENT APOPLEXY is, however, far more serious.

Symptoms.—Usually when called to a case the animal is already in the recumbent position, unable to rise, the head thrown around to the side, eyes dull, scarcely if at all sensible to the touch. Lacteal secretion very much diminished. Occurs from a few hours to three or four days after parturition. If the veterinarian's attention is called to the case at the outset of the symptoms, he will find the animal in a somewhat nervous condition, a wild look about the eyes, some twitching of muscles or tossing of head, and on moving the cow she will show weakness of gait, not having proper control of her hind parts, and perhaps unable to proceed without falling.

Treatment.—If seen while still able to be on her feet, drawing blood and applying cold to the head will sometimes be all that is necessary to a hasty recovery. The animal should never be given anything in the shape of a drench, on account of the danger of strangulation. When down, my directions for treatment are to put the animal in a comfortable position; a small sack of ice tied around the horns or to a halter; the cow made to lie on her chest by keeping her head around to the side, and a log, box or some convenient packing under the shoulder of the opposite side. A thin sheet, taken from a bucket of cold water, and placed over her back, this to be covered with plenty of good dry covers, and the sheet to be resaturated whenever it becomes dry and warm. Occasional stripping at the teats, thus stimulating secretion, and the administration hypodermically, every two hours, of two and one-half grains of muriate of pilocarpine in solution.

SOME REMOTE ANCESTORS OF THE HORSE.

B. DR. W. J. MARTIN, Kankakee, Ill.

A Paper Read before the Illinois State Veterinary Medical Association.

During the last few years the science of paleontology has made such rapid advance, that by its aid we are able to trace the ancestors of some of our domestic animals to a very remote part, and to prove beyond a doubt that the present horses possessed by them have only been arrived at by a series of gradual changes or evolution from a very simple origination to the highly complex one they possess to-day. To no animal can the law of evolution be applied better than to the horse; in fact, the horse family may be considered as furnishing an almost positive proof of the correctness of that theory. It was long one of the dogma of natural science, even up to the beginning of the Nineteenth Century, that previous to the discovery of the Western Hemisphere by Columbus, no horse had ever existed thereon. These reasonings were most effectually disproved by Buckland in "Beachey's Voyage to the Pacific in 1831," in which he found the fossil remains of horses frozen in the cliffs of Eschsholtz Bay, Alaska, and which there is good reason to believe were the ancestors of our present domestic horse. The next account we have of fossil horses is by Chas. Darwin, in 1832, in his voyage round the world in the ship "Beagle." He found in the Pmpean deposits of Bahia Blanca, South America, together with the remains of the mastodon, megalonyx, megatherium, toxodon, and other extinct animals, the teeth of an extinct horse family. This tooth, Prof. Owen found, in comparing it with one found in North America by the eminent geologist Chas. Lyell, belonged to an extinct family of American horses, and gave to it the name of *Equus Cursidene*, from the peculiar shape of the teeth. We have in the science of patentology men who have acquired a national reputation, and have done their work most nobly in assisting to unravel the mysteries of nature. Foremost among them stands the name of Dr. Joseph Leidy, the eminent com-

parative anatomist of the University of Pennsylvania, and it is to him we are indebted for our first systematic knowledge of the extinct horse family of this continent. He enumerated and described no less than nineteen classes of fossil horses, from remains collected by the Philadelphia Academy of Sciences. Prof. E. D. Cope, of Philadelphia, has also made fossil horses a special study for many years, and was the first to discover and describe some of the missing links in the horse family.

In order to give anything like a complete history of the genealogy of the horse, it becomes necessary for us to take a glance at the geological formation of the earth. The earth, as you know, is divided into epochs, or periods of time; these we enumerate from below upwards, and they are as follows: Beginning with the first, or primitive formation, we have the Archean, a period in which, as yet known, no life had made an appearance on the earth. The next epoch is the Paleozoic, or the era of ancient forms of life. Next come the Mezozoic, or the era of middle life; while fourth and last comes the Cenozoic, or the era of more recent life. Now these periods just named are further subdivided, but for our purpose it is not necessary for us to name only the last. The Cenozoic period is divided into two periods, viz., Tertiary and Quarternary. Now these two periods are further subdivided into Eocene, Miocene and Pliocene. It is with these last subdivisions we have here to do, for it is in the Eocene formation that mammalia first make their appearance on the earth. It is here that we find an animal having distinct ungulate characters, namely, the possession of a scapula, and feet without claws. This animal antedated the elephant, the rhinoceros, tapir, and, in fact, all known hoofed mammalia. The name of this ancient beast is Phenacodus, and Cope has referred nine species to this genera. Phenacodus had five functional toes on each limb, which was semi-plantigrade. The number of teeth was, incisors, 12; canines, 4; premolars, 16, and molars, 12, or 44 in all, with a small diastema between the canines and premolars. The skull presented the usual characteristics of other Eocene mammalia in the incomplete condition

of the zygomatic. The number of vertebrae was as follows: Cervical, 7; dorsal, 14 to 15; lumbar, 6 or 7; sacrum, 3 or 5; caudal bones present are 11, but many more are wanting, as the tail was very long. Cope, in referring to a restoration of this animal, says: "The foregoing measurements show that *Phenacodus Primaraeur* was in size between that of a tapir and a sheep. Its body was rather longer than these animals, and its legs shorter and more robust, This animal was omnivorous in its diet." Next in upward succession comes an animal known as *Hyracotherium*. Here we find a distinct advance over *Phenacodum*. *Hyracotherium*, having but four toes on each front limb, and but three on the hind ones, I may say in passing that the change from *Phenacodus* to *Hyracotherium* was not sudden, but, on the contrary, was very gradual, as we can trace the ruins of several families between *Phenacodus* and *Hyracotherium*. Among these may be mentioned *Memeotherium* and *Systemodon*. These genera were all five-toed, and the species belonging to them serve as a bridge to connect the families of *Phenacodus* and *Hyracotherium*. The dental formula in *Hyracotherium* was the same as in *Phenacodus*, but the triturating surface showed a more complex structure. The size of this animal ranged from that of a fox to a sheep. The remains of this animal has been found very extensively in the Wasatch beds of Eocene age in this country, and also in the London Clyde of the same period in England. The next animal connected by national affinities with *Hyracotherium*, but of a higher order, is *Anchitherium*. The remains of this gender has been found in abundance in the miocene foomation of the Bad Lands of the White River, Dakota. In general outline the skull of this animal bears a striking similarity to that of the horse. The number of teeth possessed by this animal was 44 in number, and are identical in form with those of the same family found in France. Although the teeth of this animal number 44, we can see a great reduction in size of the first premolars in each jaw, which goes to show that even at that early day the process of eliminating the supernumerary teeth

had begun. Nearly all the osteology of this animal resembles corresponding parts of our present horse, and it can be asserted with confidence that *Anchitherium* is in the direct ancestral line of the present horse. The number of digits was three on all the limbs. The middle toe was large and well developed, while the outside ones only came to the ground, when it was marshy. In size this family varied from 3 to 4 feet in height, and was strictly a vegetable feeder, and had considerable speed. In the family of *Anchitherium* were the following genera: *Hyphippus*, *Anchihippus* and *Parahippus*. These animals were closely allied to *Anchitherium*, whom they resembled very much in structure, the only difference being that they were somewhat larger.

We now emerge from the Miocene formation to that of the Pliocene, and in doing so we place ourselves, as it were, on a more solid ground, and from this time onward can trace, almost without a break, the horse to his present place in nature. The first equine animal we meet with in the Pliocene Strata is that known as *Hipparion*, a most graceful animal indeed, resembling our present ass in size. The feet of *Hipparion* still possessed the extra toes, but these were now reduced to mere rudimentary appendages. In other respects the skeleton was constructed on the same general plan as that of the present horse. The remains of this animal has been found in the Tertiary formation of Europe and Asia. Abundant remains have also been found in this country. The next animal we find closely related to *Hipparion* is an animal called *Protohippur*, and from which it does not differ in any essential manner. We now leave the Pliocene Strata, and advance upwards to that known as Quarternary, and in this formation we find the remains of horses differing in no particular manner from our present horse. Dr. Joseph Leidy, in summing up his conclusions on the extinct horses of this country during this epoch, says: "I think there is evidence in favor of the probability of there formerly having existed three distinct species of horses during the Pliocene and Post-Pliocene in North America."

And probably *Equus Farrilis*, or *Equus Cabballus*, may have existed in the extreme northwest part of the continent, extending from Asia. One of the strange facts in connection with the history of the horse, is their becoming extinct in the new world, and at a period long anterior to the coming of Columbus, as at that time the Indians had not the remotest tradition concerning him. I have spent many years in investigating the works and mounds of the Monnd Builders, a race of mankind who long antedated the Indians, and from the innumerable number of bones of nearly all kinds of animals found in their mounds, I have not been able to discover a single one pertaining to the horse. So that the horse must have disappeared from this country at a remote time indeed. Why they should have become extinct, and upon their reintroduction from Europe multiply with such great rapidity, is one of the problems that natural science has not as yet succeeded in unraveling. In Europe, during the Glacial and even the Preglacial period, countless herds of horses roamed over the land, and the half-savage man of that period had not yet domesticated them, but they furnished one of his main articles of diet, for there has been found in the lone caverns of that country horse remains along with those of the mammoth, cave bear, hyena, and even man himself. I have seen the right metacarpus of a horse taken from a cave at Dordogne, France, which closely resembled the present horse, only the bones were very small, and you may judge of the age of those bones when it was estimated that they belonged to the Glacial period. In conclusion, I will say a few words in regard to the

DOMESTICATION OF THE HORSE.

The horse, from an archæological point of view, is comparatively a recent servant of man. That he was not used by man as a beast of burden during the older and newer Stone Ages seems certain, and it was not before the Age of Bronze that man brought this animal under subjection. That the horse existed in Europe and Asia from a remote period of time seems

certain. Not only do we find his remains, together with those animals that have been extinct, but also rude drawings of him on tusks of ivory and bone have been found in the caves occupied by pre-historic man as an abiding place. The first authentic account of the domestication of the horse is found in the tombs and on the monuments of the nineteenth dynasty of Egypt, 1900 years before our era, and then in those tombs we see paintings, representing men in the act of administering medicine to sick animals. Showing that at that remote period the veterinary art was known and practiced.

REPORTS OF CASES.

AN INTERESTING POST-MORTEM.

BY L. H. HEMPELMANN, D.V.S., House Surgeon to the American Veterinary College—Hospital Department.

On December 11th, 1893, a bay gelding was presented to the college by Dr. J. S. Lamkin of Yonkers, N. Y., who gave us the following history:

The horse had been troubled with incontinence of urine for about two months which had been treated, but without success. The urine was always mixed with mucous and at times contained some blood.

The patient was placed under observation; every day his bladder was emptied by a catheter and the urine—about two ounces usually—collected. On rectal examination the fundus of the bladder seemed to be somewhat thickened, but no calculus could be felt.

A week after the patient came under our observation, it was decided to explore the bladder. The urethra was accordingly opened and a sound introduced into the bladder, but nothing definite could be discovered.

The animal was then destroyed for a post mortem examination, which in many respects proved to be highly interesting.

The walls of the bladder were found to be about three-eighths of an inch thick and a large neoplasm, probably an epithelioma, was found at the fundus of the organ. This growth so diminished the capacity of the organ that it was impossible for it to contain more than four or five ounces of urine at a time. This thickening caused the incontinence in all probability. The left kidney and ureter were entirely absent, and no trace of either could be discovered after a most diligent search. The right kidney was found in its usual place and was of normal shape but very much enlarged, weighing forty-five ounces, or very nearly as much as both usually weigh, viz.: fifty-two ounces. The right ureter was about twice its normal size and was enormously distended near its insertion into the bladder. This distension commenced about three inches from the bladder and gradually increased until its insertion into the bladder, where it was about two inches in diameter. The thickened condition of the walls of the bladder probably interfered with the entrance of urine, which gradually gave rise to this dilatation.

LYMPHADENOMATOUS TUMORS.

BY M. BUNKER, D.V.S., Newton.

I have sent you by Adams Express to-day a keg containing a specimen which I think you will agree with me worthy of a trip to the A. V. C. The animal was an express horse, about six or seven years old, strong and hearty, in fine flesh, weighing, when in usual working order, about 1,350 lbs. On the 26th of November I saw him first, and the only symptoms to be noticed was a general œdematous condition of the neck, breast and fore legs. I suspected purpura hæmorrhagica, but could not find any other of the characteristic symptoms of that disease.

I gave the horse a cathartic, and put him on stimulants and tonics. He gradually improved in general condition and appearance, the swelling going off almost entirely. Later on

he had an attack of pleurisy and some pneumonia. I applied a good mustard paste to the chest, and relieved his condition.

His general condition did not improve, gradually reducing in flesh, loss of appetite, legs swelling again, and also on breast. About a week ago I found an odor to the breath, and said suppurative pneumonia. Yesterday I had him killed; post-mortem this morning. There were probably two or three stable pailfulls of fluid in the chest. Both lungs more or less adherent to the costal pleura. The lower third of both lungs showed pneumonia, and there were small abscesses where suppuration had commenced, but not what one would call a bad case of suppurative pneumonia. On removing the lungs from the heart and its vessels, I found this mass which you have in the keg. It is something new to me, and I would like to have your opinion on it. It filled the space between the two lungs, extending nearly back to the diaphragm and way forward into the muscles of the thorax. This mass came out with the lungs, and so I did not save any more of it. The other part was beginning to break down, and was very fetid.

This description is not as extended as you might wish, and if you want more I will write it.

Weight of mass, 13 lbs. It was put in strong alcohol, so as to be fit for slides and to preserve the shape.

What is it? What caused it? Is it tubercle?

[SPECIMENS EXAMINED,—Two distinct tumor formations removed from mass surrounding aorta and œsophagus.

In both cases they consist of lymphoid or adenoid tissue; *i. e.*, delicate reticulum and lymph cells, the one harder than the other, and larger base excess of fibrillated bands or net-work, and is the older formation. The softer tumor consists largely of cells with fine net-work. No degeneration is noticeable, and therefore they probably belong to the lymphomata, which originate usually from lymphatic glands. Clinically are innocent tumors, except as lymphadenoma.]

TRAUMATIC TETANUS.

BY W. F. DERR, V.S., Wooster, O.

On Dec. 19, 1883, I was called to see a well-bred five-year-old mare, which the owner said had been lame for about

two weeks. I found on examination that she was lame in the left hind foot, the result of a nail puncture, and she had all the characteristic symptoms of traumatic tetanus. I removed the shoe and allowed the pus to escape, and applied a boot. She was then carefully led to my hospital, about one mile distant. Being of a somewhat excitable nature, the jaws were well locked on her arrival at the hospital. She was placed in a large darkened box, and the wound was well washed with a solution of bichloride (1 to 500). Then had a poultice applied, with the orifice first well smeared with the solid extract of belladonna. and she was put under belladonna and calabar bean internally. She was left for the night at 11 P. M. At 6 A. M., on the 20th, I was hastily called by the barn-man, saying she was down and dying. I found her down in the corner, with all the symptoms greatly exaggerated and sweating profusely. I supposed she was dying in convulsions, and pulled her out and helped her on her feet, but she no sooner gained her feet than she again threw herself to the floor, and on examination I found her to be suffering from indigestion, with impaction of the colon, having considerable tympanites. Her jaws were completely locked by this time, and she was suffering terribly. I injected morphine gr. x hypodermically, and gave a solution of aloes as well as possible, considering the condition of the jaws. She received no relief whatever from the morphine, and I then gave chloral $\frac{3}{4}$ i; also enemata. The tympanites increasing, with no alleviation of symptoms, she was relieved by puncturing the cœcum, which was repeated three times during the day and night. No evacuations nor action of the bowels whatever, and the animal still suffering considerably, I thought I would try the effect of eserine and pilocarpine, although knowing it to be not the best of treatment, the bowels being held by powerful contractions. I gave her eserine sulph. gr. i, pilocarpine, gr. iss, hypodermically at the time of her suffering excruciating pain. The drug did not act as desired, having no effect on the bowels, but acted as an anodyne and relived the pain almost entirely. This lasted for about two hours, when she again

became restless and I repeated the dose, when it again had the same effect of relieving all pain. She then remained comparatively quiet until the next day, in the meantime receiving the belladonna and calabar bean. She took some nourishment in the way of gruels. On the evening of the 21st she had a small passage, and from that time on she began to slowly improve. On the 27th, from some cause, probably the noise about the hospital, she had a relapse and again became very nervous and excitable. I then moved her into an out-of-the-way stall, where she would not be molested but little, and she again began to slowly improve, lying down at intervals of every three or four nights.

In about three weeks she took distemper very badly, and coughed very much, and had a profuse discharge from the nostrils. I gave her the usual treatment, and in ten days she had recovered from that. She remained very stiff and the muscles *very* rigid, especially in the leg that she had been lame in. She was sent home on February 1st, still very stiff, but eating and feeling well. The muscles of the jaws had relaxed completely, and she could eat as well as ever.

At the present writing (February 7th) she is doing well, and will, in all probability, be well in three weeks. The object of writing this is to report the effect of eserine and pilocarpine. I do not know if it was the drug or the condition of the system which caused the peculiarity of its action.

A DOUBLE MONSTER PROBABLY OF THE HETERALIAN ORDER.

BY H. B. AMBLER, D.V.S., Chatham, N. Y.

On the evening of January 4th I was called to attend a cow in labor. I found a six-year-old cow that had been in violent labor some time, but her pains had grown considerably weaker.

Upon examination, I found the foetus in a posterior presentation, three hind legs and two tails in the vagina. The foetal fluids had all escaped, foetus dead, the uterus hot and swollen from the constant contraction against the foetus and the various

manipulations which the cow had been subjected to by inexperienced hands. Consequently a diagnosis was very difficult, and proved for several hours to be very puzzling.

I found the three hind extremities attached to a body of large size and shape, such as could not be delivered intact through the natural channel.

I decided to try embryotomy, and succeeded in removing the three extremities that were presenting themselves; then I found myself stuck; could not find any more posterior extremities, but could feel a hoof of what I supposed to be a fore extremity.

The peculiar formation of the pelvis, together with the swollen condition of the uterus, made it impossible for me, with the instruments at hand, to proceed any further with the operation.

As the owner was willing to resort to anything that had a chance of saving the cow's life, I gave the cow a few hours' rest, as well as myself, and then started to remove the foetus by laparotomy, but upon making my incision in the flank I found the peritoneum covering the uterus, and that, contiguous to it, in an inflamed state, and blood-tinted serum in the peritoneal sack. As it was beyond all reason to suppose that an animal in this condition could survive such an operation, I immediately destroyed her.

I then removed the foetus, uterus and all through the flank, and found a double monstrosity, so complex that I will not attempt to name it.

It consisted of one nearly completely developed body that had been lying in a lumbo-pubic position, and united to it at the abdomen and pubis was a second, short and smaller individual. The extremities of the first were all well developed, the near hind leg being drawn forward and under the off-fore of the second. The extremities of the second were all well developed except the near fore, which was short, crooked and directed backwards, and off of the scapula of this extremity was a projection about six inches long that looked as if it might.

have started to have been a ninth leg. About four inches below the tail of the second was a vaginal projection, one and a half inches long, and covered with hair, that probably was intended for an anus. There was no vulva, penis, nor testicles visible on either calf. The head of the second was situated on a very short neck that was applied against the posterior portion of the sternum of the first. This head was short and presented a very peculiar formation. The ears were situated lower than the natural, the left one being very small and covered with long hair. the opening to the ear proper being just anterior to it. The lower jaw was divided up so as to present a very interesting formation, the incisor teeth were in two separate bones (three in each), the molars being on a bone by themselves and immovable.

Unfortunately, this calf was in an advanced state of decomposition, and as I was very busy at that time, it had to be buried without my making a dissection of it.

What the arrangement of its internal organs were can only be a conjecture, but they must of necessity have been very complex.

[While we thank Dr. Ambler for his communication, and for the photographic views accompanying it, we regret that these were not sufficiently developed and clear to permit of their reproduction.—EDITOR.]

UNCOMMON ABDOMINAL OBSTRUCTION.

By F. P. WILLIAMSON, D.V.S., Raleigh, N. C.

Post-mortem examination on female calf, age 6 months.

All organs in normal condition, in abomasum was contained a cheesy mass measuring 9 inches in length, $4\frac{1}{2}$ inches in breadth, 3 inches in thickness, weighing 31 ounces; just back of this mass, completely blocking up the pyloric opening of the small intestine, was a quantity of sand an inch in thickness. That this effectually stopped the passage of food was shown by the fact that the 180 feet of intestine back of this was entirely empty.

EXTRACTS FROM FOREIGN JOURNALS.

PARASITES OF THE SARCOMA.

By RICHARD MIDDLETON, D. V. S., Philadelphia, Pa.

The author has in the last year written upon the small bodies found in the intima of cancer cells, which he considers of parasitic origin. His latest effort, in four cases of cancer of the mammae, has permitted him to positively detect their animal nature.

They consist of a very small body, which in the first stage of development is surrounded by a protoplasmic envelope, all of which is enclosed in a capsule. As the development progresses, the protoplasm gradually becomes less and less ; the body continues to acquire dimensions, until finally it ruptures and discharges numerous round refractory globules.

In its primitive state the parasite takes kindly to haematoxylin, while in its maturer condition it yields only to eosin and aniline orange. According to its structure and history of development, this microbe appears to belong to the class of cocci.

At the close of his article the author mentions an easy method of discovering the coccus by means of the staining combinations. The section of cancerous material, cut very thin, is hardened, and colored with a mixture of saffron and haematoxylin, coming after this in a solution of anilin orange. By this procedure the nucleus assumes the saffron, the protoplasm the orange, and the body of the parasite the haematoxylin.—*Deutsche Medic. Ztg.*

PELVIC ABSCESS.

Ber examined a 1½ year old calf which had suffered for some time past with constipation and loss of appetite, and, remarkable to state, the rumination was not influenced by the indisposition. After two weeks of these troubles they suddenly disappeared ; later, however, the same symptoms reappeared, and with them a swelling which protruded at the left side of the anus, completely occluding the rectum.

By incising this tumor, one and a half quarts of pus were liberated, and immediately thereafter a copious defecation. Treatment consisted of clyster of $\frac{1}{2}$ per cent. lysol solution.

In a second case loss of appetite had existed in a cow for a considerable time, finally inducing a cessation of rumination. The circumference of the abdomen continued to increase, and by a manual examination per rectum, numerous tumors or irregularities were detected.

Slaughter was advised, and after death no less than twenty-three large sub-peritoneal abscesses were exposed.—*D. Th. Wochenschrift* 27.

PUERPERAL PARALYSIS.

District veterinarian Rasberger was called to see a cow, unable to rise, which had calved six hours before. A subcutaneous injection of $1\frac{1}{2}$ grains veratrine was administered. From the conditions visible, and the fact that for a period of thirty hours neither feces or urine had been passed, the diagnosis was made of post partem paralysis.

Drastics and excitants were applied, but the animal was killed. Post-mortem negative.

Another case, taken thirteen hours after parturition, became very weak, fell and again stood upon her feet. Pulse weak and rhythmical; anorexia with constipation and retention of urine. On the evening of the twenty-third day the patient fell, and could not again rise; convulsions with dyspnea rapidly debilitated the animal, so that slaughter was advisable. Post-mortem negative.

Rasberger recalls 25 cases necessitating slaughter. The results of the examinations in these showed ten to have suffered emphysema and œdema of the lungs, and four traumatic pneumonia from particles of food. Diseases of the brain not present. The therapy consisted of cold applications to the head and neck with hot fomentations, one over the pelvic region and posterior limbs; internally the following as a drasticum:

R. Ol. ricini $\mathfrak{z}$ xxx.

Ol. tigllii 3 vi.

M. et f. Haustus.

As a nervous extitant, digitalis and spiritus dilutis with caffen, camphor or eserine hypodermically. The bladder should be emptied every eight hours by means of the catheter. —*W. f. Th. R. u. Vzcht.* 32, '93.

ECZEMA IN THE HORSE.

A nine-year-old saddle stallion suffered from the middle of June to the end of July from a cutaneous eruption, A careless person might have looked upon the same as the usual heat rash, but when closely examined it presented unmistakable characters of differentiation.

At the beginning we noted spots of incrustation upon the mane and hips; these resisted all treatment, increasing in extent so rapidly, that in fourteen days the whole mane was a mass of confluent crusts, under which the cuticle was wet, and bled freely. About this time there appeared over the surface of the body swellings the size of peas; these passed in regular stages to scab and depilated areas with a destruction of the skin pigment. Upon the nose, lips and in the region of the eyes, malignant prominences could be observed, with a few knotty formations at the base of the tail.

Prepuce swollen but not painful; absence of pruritis in the same and also in the mane, but upon manipulation the sensitive nature of the malady was made manifest. Glands of the laryngeal and inguinal regions enlarged. Gums of the incisor teeth swollen. Lips and gums irregularly punctated by postules and erosions. No salivation and no disturbance of a constitutional nature was present.

Treatment.—After twice bathing in creolin and lysol solutions, the secreting areas were rubbed with a zinc salve containing iodoform and tannin. Healing took place, after which the swollen glands subsided. This stallion experienced the same or a similar affection the year previous; the treatment was the same. The universal spreading over the body, and its benign character, distinguishes it as an unusual disease of the cutis. The aetiology remains hypothetical.—*Zeitscher f. Vet. K.*, 6, '93.

MERCURY POISONING.

A farmer who had bought from the druggist a pound of grey mercury salve as an agent for lice, applied the same to nineteen young cattle, with considerable friction and over a large surface.

On the next day all the animals so treated refused their mess, and exhibited spasmodic contractions of the general muscular system and regular in character; also a foetid diarrhœa having a most intolerent odor and disgusting appearance. The gait exceptional, and some few were too weak to maintain themselves standing. After several days the symptoms became more benign, but the local lesions, where the salve had been applied, only now commenced to appear; the latter consisted of a cutaneous swelling, and later a moist eczema of a most irritable nature.

This eruption healed very slowly after the lapse of two months. In some of the individuals the skin became hard and scaly over more or less of the surface. The animals surviving the severest local lesions were attacked fourteen days later with painful laryngitis and subsequent pneumonia. Respiration, 40-50; pulse, 95; temperature, 104° F.

In the other patients only the cough appeared; a young bull, six months old, succumbed to the application.—*Berliner Woch.* 4, '93.

RUMINATIO HUMANA.

Hille communicates the following upon the subject of rumination in man. The first case respects a 45-year-old cow hand, who had regurgitated regularly since his sixteenth. The act was continuous, and occurred independent of food consumption, and was not under the volition.

The second and third cases were respectively a 53-year-old man and his 21-year-old son. The latter had been accustomed to the process since early childhood. The father had suffered for a long time from dyspepsia, which he stated was contracted in his twentieth year.

The rumination in the last two instances was governed by

the will, and could be entirely suspended, although, when the attention was not fastened upon the same, it proceeded uninterrupted.

Ruminatio humana is not to be confounded with that of animals, which is a physiological action.—*Deut. Med. Ztg.* No. 37.

EXPERIMENTAL IMMUNITY AGAINST INFLUENZA.

Dr. Bruschetti has made exhaustive trials upon the activity of the influenza bacillus, and finds that the living cultures upon bouillon or agar-agar, when intratracheally injected, have but a slight pathological activity; this is not the case, however, when the microbe is propagated upon blood, its virulence is well marked.

The best material, and that which imparts the greatest degree of immunity, is the latter blood culture after it has been filtered through the Berkfeld apparatus. This serum possesses a strong antioxic power, but does not destroy the bacteria. The serum of animals so vaccinated, when injected into others, imparts its quality to them, and guarantees an immunity from the affection.

This liquid also has the power of transmitting a curative effect, in as such as rabbits may be saved from death by its application.—*D. Med. Wochenschrift*, 33, '93.

VALUE OF INJECTIONS OF MALLEIN IN THE DETECTION OF LATENT GLANDERS.

For some time the Urban Axle Company of Paris has sustained great loss from the existence of an endemic state of glanders in their stables. Despite the fact that every suspected horse was immediately killed, and that its neighbors were isolated, the endemic was fed by latent cases. How were these to be detected? The required test appears to have been discovered in mallein. The employment in subcutaneous injections on 4,450 horses was followed in 562 instances by the characteristic rise in temperature. These 562 animals were slaughtered,

and the necropsies revealed unmistakable evidence of the presence of glanders, the existence of which could not possibly have been suspected ante-mortem. In only four cases did the test fail.—*Vet. Record*.

DISLOCATION OF THE RIGHT KIDNEY.

BY E. W. ENDERTON, M.R.C.V.S., Maybole.

The subject of the above accident was a valuable brown seven-year-old hunter gelding, the property of provost marshal of this town.

On the 22d of October I was called in to treat him for a wound on the fore-arm received whilst hunting, from the kick of another horse (an entire). This caused him very little inconvenience, and he was soon ready for exercise.

His first hunt after this was on November 10th, about which I well remember telling the owner he must be very sparing with him as his horse could not be in hard going condition. However, a fair good day's hunting was obtained from him, but on this day he met the cause of his death.

In about the middle of the hunt an apparent trivial accident occurred of the nature of a blind jump into a dyke. After this happened he jumped a stone wall, but gradually lost spirit until finally a trot could scarcely be got from him. I happened to be in the provost's yard when the horse returned, looking very fatigued, and trailing the toes of both hind feet on the ground. I ordered him to be well groomed, a mash given, his loins rubbed with liniment, and administered a restorative draught.

At 12 o'clock at night, when I again visited my patient, I was agreeably surprised to find him looking quite cheerful, neighing for food, of which a little was given him, then we left him for the night. About 4 o'clock in the morning the stableman again visited him, when he was found to be in a similar condition, and a little more food was given him.

At 8 o'clock I was called down to see him, and found him in a pitiful condition, a profuse sweat covering the entire body, standing with all four legs drawn together, back extremely

arched, pulse 80, large and feeble; temperature, 101 3-5; a dull hard swelling over loins and extending over last eight ribs, principally at right side, continual scraping of bedding, which was no sooner strewn out than was gathered up again in lumps; never attempting to lie down; there was no passage of fœces or flatus, nor yet of urine until about three hours before death. My diagnosis was some internal injury, and the prognosis unfavorable.

About 3 o'clock his temperature rose to 104, and continued to rise until death, which occurred a few hours later, it being then 108. About this time frequent and small quantities of urine tinged with blood were evacuated with a considerable amount of pain. About 5 o'clock he went down never to rise again, being in extreme agony for about an hour and a half before death closed the scene.

Post-mortem.—All the organs in the body appeared perfectly healthy, except the right kidney, which was extremely friable, and could be easily crumbled between the finger and thumb. This organ was found about six inches out of its place, having slipped downwards and forwards; its capsule and surrounding tissues had undergone violent inflammation; extreme peritonitis was also present; fatty infiltration and deposition occurred in all tissues of the body.

Never having heard of such an accident before must be my plea for recording this one. The extreme fatty condition of the animal being to my mind the predisposing, and the sudden jerk occurring in the dyke, the exciting cause.—*Vet. Record.*

TWO FISH HOOKS AND LINE EXTRACTED FROM ŒSOPHAGUS OF COW.

BY ARCHIBALD RENFREW, M.R.C.V.S., Broadway.

On October 26th I received the following telegram: "Come to Park's Farm, Evesham, at once. Cow with fish hook in throat."

On reaching the place I found the cow lying on her sternum, head and neck stretched out, anxious expression, and drooping ears. The œsophagus, with its surrounding tissues, was very

much swollen, and painful from the pharynx right down to its entrance to chest. A piece of string hanging loosely from the mouth was fastened to the near horn; the cow at short intervals being seized with severe fits of coughing, associated with copious discharges of saliva tinged with blood from mouth and nostrils.

Before making a minute examination of the parts, the owner gave me the following information: The piece of string so-called had, by a peculiar knot just outside the mouth, been identified by the shepherd as a piece of a fishing line, on the end of which, he said, were fastened two fish hooks. The shepherd's cottage is situated on the bank of the river Avon, and adjoining the field in which had been grazing Mr. Woodward's (the owner) cows. The line had been laid beside the fence, and keep being short the cow was supposed to have picked up the hook and line when licking around the root of fence. The owner also informed me that he had the day previous attempted to remove the hooks by the aid of a willow with a ring attached, but finding this gave rise to coughing and bleeding, he gave up the idea.

With the above information, I endeavored to locate the seat of attachment of the hooks, but this, owing to the œsophagus being equally painful and swollen throughout its visible course, I was unable to do. However, with Mr. Woodward's permission, resolved to try and remove the hooks by the use of the probang; so fastening a strong piece of string to that hanging from cow's mouth, I passed this up through the probang, minus the stillette, and over both I passed the mouth gag and fixed this in position, and then had the head of cow drawn well up by a rope from horns over the doorway, and with a man on each side to keep the head straight, I proceeded to gently pass the well-oiled probang with one hand, while holding the string with the other. The instrument passed down quite smoothly till within a few inches of the stomach, when it became interrupted, but with a very slight jerk it moved on, and now, slightly tightening string at outer end of probang, I removed

all together, and was pleased to find the two "missing links" still intact.

The cow did not feed well for a fortnight, nor did she ruminate during the first week after the operation, but subsequently did well.—*Vet. Record*.

PREVENTIVE INOCULATION AGAINST ANTHRAX AND SWINE PLAGUE IN HUNGARY.

A report issued by the Hungarian Minister of Agriculture with regard to the operations of Pasteur, Chamberland Laboratory shows that in 1892 806,932 animals were protectively inoculated, or nearly 200,000 more than in the preceding year. Since its institution in 1886, this laboratory has supplied material sufficient to inoculate 1,237,674 pigs, and so to protect them against swine plague; while enough has been furnished to inoculate 1,122,558 horses, cattle, sheep, etc., against anthrax.—*Vet. Journal*.

EXPERIMENTAL IMMUNITY AGAINST INFUENZA.

Bruschettini (*Rif. Med.* July 16, 1893) returns once more to this subject. In previous papers he demonstrated a pathogenic action of the B influenzæ on animals. He found the rabbit very sensitive to this infection, and was able to ascertain conditions under which this animal could be infected at will, either with a slight transitory affection or with a grave fatal disease. He showed that these two types corresponded closely to the varying forms of the disease in the human subject, both in clinical course and pathological effects. He next attacked the subject of artificial immunity, dividing his researches into three series. He sought first to vaccinate animals against the infection; having succeeded in this, he tried whether immunity could be conveyed from a vaccinated to an unvaccinated animal by injections of the serum derived from the former; finally, with the serum he has tried not only to prevent, but to cure the already established disease. In all these points he has met with success, and his conclusions may be summarized as follows: (1)

The rabbit may be without difficulty vaccinated against the effect of cultures of the influenza bacillus. (2) The material best suited for the vaccination, in that it gives the highest grade of immunity, is obtained by filtering serum cultures of the bacillus through Berkefeld filters. (3) The serum of animals thus vaccinated possesses a marked antitoxic but no bactericidal power. (4) This serum also possesses the property of conferring on other animals immunity both against the infection and intoxication produced by cultures of the bacillus. This property is so powerful that injections of the serum in the proportion of 1-42000th of the body weight suffice to induce immunity, or perhaps even less. (5) The serum has also a marked curative action, reducing the temperature of already affected animals, and preventing an otherwise certainly fatal issue.—*Ibid.*

PARIS CONGRESS ON TUBERCULOSIS.

The following resolutions concluded the work of this important meeting held in Paris last July :

1. That butchers' meat should not be offered for sale until it has been passed as healthy by a competent inspector, and that the inspection of meat should be made in villages as well as in towns.

2. That public schools should be provided with spittoons in sufficient number, so as to prevent children spitting on the floors and that instructions be addressed in this sense to the managers.

3. That there is reason to demand that every animal about to be exhibited at a show subventioned by the state shall have been previously submitted to the tuberculis test.

4. That the tutors and inspectors of the Academy follow the example of those of Bordeaux and Chermont, and invite the institutors to join in popularising prescriptions against the contagion of tuberculosis.

5. That dead bodies should undergo an absolute disinfection before burial.

6. That tuberculosis persons should be collected in special hospitals in groups, according to the stage of the disease, and all the fewer as the malady is more advanced; while as a transitory measure, the duration of which should be as brief as possible, the phthisical should be gathered in special halls, which ought to be disinfected by the procedures now in vogue.

7. That apparatus for the sterilization of flesh from tuberculous animals be installed in abattoirs in order to allow of the utilisation of such flesh without any danger.—*Vet. Journal*.

INTERESTING PROFESSIONAL ITEMS.

By N. N. S.

A much-to-be-admired and encouraged disposition is being daily evident among conscientious owners of cattle, lest they should be furnishing milk from tubercular cattle or disposing of the same to innocent purchasers.

Never was there a more representative gathering of the entire profession in New York City than assembled at the recent initial meeting of the New York County Veterinary Medical Association.

All the two-year colleges should gravely consider the fact that their graduates of the future will be debarred from membership in the United States Veterinary Medical Association, and the time is not far distant when similar requirements will be adopted by state organizations.

Tennessee's State Board of Health are regularly kept informed by State Veterinarian Rayen of the prevalent diseases of the livestock in their state, especially those of a contagious and infectious character. Other state boards of health would do well to establish a similar practice.

The twelfth annual meeting of the Michigan State Association at Lansing on the 6th of February, had on its programme

the very interesting topic of "Professional Ethics," by Prof. Reycraft, of the Detroit Veterinary College.

Philadelphia receives daily a large consignment of milk from a herd of cattle, owned by one of her most prominent citizens, among which there have been a large percentage of tubercular animals, even though the owner has been cognizant of the fact for years.

Dr. Jas. A. Stuart, Veterinarian to the Canebrake Experiment Station, Alabama, has resigned to resume private practice again in the north at Beverly, N. J.

The second number of the *Veterinary Magazine* is replete with interesting material. With three strong, influential veterinary journals, America makes a strong showing.

The veterinary army bill now pending before Congress has received the endorsement of Generals Schofield, Merritt, Howard, Vincent and Badchelor, and has gained the recommendations of all the leading cavalry and staff officers. They consider it a matter of economy as well as to the army veterinarians.

"An obscure and undescribed disease of the Deer Family," "Transfusion of Blood," "Penetrant Cauterization in the Treatment of Lameness," "Surgical Treatment of Lesions of the Hock," "Castration," "Osteo Porosis" and a number of interesting committee reports interested the veterinarians at their state meeting in Philadelphia on March 6th, to which a generous invitation was extended to all veterinarians.

Veterinarian ambulances are rapidly being adopted by the humane societies in all large cities. New Orleans has just had a very complete one constructed in Philadelphia.

North Dakota has added to her scientific bodies a state veterinary organization. Her corps of officers are well known and active, earnest members of the profession.

Secretary Morton has well won the gladly conceded approbation of the veterinary profession in his decision, that the assistant of chief veterinarians shall be graduates of veterinary science, and no longer chosen from the laity.

California, through the excellent work of her state veterinary organization, is doing yeoman work in veterinary sanitary agitation for the promulgation of laws in the interests of her people. Well-directed and oft-repeated will surely bring the much desired result.

The officers of the County Veterinary Medical Society of New York are all strong representatives of the profession and will no doubt make a very efficient corps of workers.

The "McKillip Veterinary College" of Chicago, will start out as a two-term school of twenty-four weeks each. What a pity it could not have been the pioneer of the most extended course of veterinary education in North America when its geographical location was so well adapted for such a movement.

President Hoskins, of the United States Veterinary Medical Association, was elected an honorary member of the new association in New York City.

New Orleans Board of Health has a veterinarian attached to her staff. A little while longer and there will be few boards without them.

The United States Veterinary Medical Association now has representatives in thirty-eight states of the union. This is a gain of fifty per cent. in six years.

Since the recent sanitary commotion at Harrisburg, Pa., some 400 of the 800 boroughs in the state have organized local boards of health, a number of which have already appointed veterinarians as members of their staffs.

COLLEGE COMMENCEMENTS.

AMERICAN VETERINARY COLLEGE.

The closing exercises of the nineteenth regular winter session of this institution took place on March 20th, at Chickering Hall, as usual, before a large crowd of friends of the college, of the new graduates and of the Alumni Association.

By the following programme the Soirée was rendered most pleasant, and proved to be one of the most agreeable ever presented to a New York audience :

PROGRAMME.

Overture,	"Masaniello,"	Auber.
Scenes from "Panjandrum,"		Morse.
March,	"New York,"	Rogers.
Prayer,	REV. W. B. BARROWS.	
Music,	"Cavaleria Rusticana,"	Mascagni.
Conferring of Degrees,	FANEUIL D. WEISSE, M.D., President of the Board of Trustees.	
Music,	"Southern Caprice,"	Wilson.
Awarding of Prizes,	PROF. C. A. DOREMLS, M.D., Ph.D.	
Music,	"The World is Mine,"	Farhblach.
Valedictory,	J. O. GEORGE, A. B., A. M., D. V. S., of the Graduating Class.	
Music,	"Robin Hood,"	De Koven.
Address,	PROF. AUSTIN FLINT, M.D.	
Benediction,	REV. W. B. BARROWS.	
Music,	"March,"	Rogers.

The graduating class numbered 42 gentlemen from various States in the Union, and was represented as follows :

Albert Francis Abbott, Dover, N. H.; George Cornelius Bretherton, New York, N. Y.; John Russell Bacon, Danbury, Ct.; Hugh Edward Clark, Cornwall-on-Hudson, N. Y.; Chauncey Leonard Chase, Berlin, Ohio; James Shaw Cattanch, Jr., New York, N. Y.; Augustus Henry Drucker, New York, N. Y.; Michael Joseph Doyle, New York, N. Y.; Harry Stillwell Field, Hempstead, N. Y.; Oscar Fausner, New York, N. Y.; William Rowan Fleming, Brooklyn, N. Y.; John Oliver George, A.B., A.M., Weaversville, Pa.; Hamilton Gutmann, Easton, Pa.; John Joseph Hayes, New York, N. Y.; Jacob P.

Helmer, Scranton, Pa.; Richard Wilkins Hewitt, Bridgeton, N. J.; Harry G. Hoover, Sterling, Ill.; John Kent, New York, N. X.; Newton C. Lazarus, Allentown, Pa.; George Leich, Brooklyn, N. Y.; James Lorimer Lindsay, New York, N. Y.

Patrick John McGuinness, Newark, N. J.; Francis Joseph McCaffrey, Brooklyn, N. Y.; Charles McCulloch, Jr., Howardsville, Va.; James Masterton, Biggar, Lanarkshire, Scotland; Charles Philip Martin, New York, N. Y.; William Brundage Moorhouse, Tarrytown, N. Y.; Robert Flanders Moore, Pocatello, Idaho; Ira Chasey Mattatall, West Tatamagouche, N. S.; Bryce Mars, New York, N. Y.; Harry Stanislaus O'Neill, Jamaica, N. Y.; Oscar T. Porzer, Brooklyn, N. Y.; Joseph Forman Roser, Maysville, Ky.; John Joseph Riordan, Beverly Farms, Mass.; Frederick Luman Ray, Leonia, N. J.; Albert T. Schnable, Indianapolis, Ind.; Wm. Christian Siegmund, Baltimore, Md.; Harry Clifton Terry, Torresdale, Pa.; Henry Otto Wolters, New York, N. Y.; Andrew Ward, Peacedale, R. I.; Christian Henry Westphal, San Francisco, Cal.; William Watkins Yard, Jr., New York, N. Y.

The various prizes were awarded by Prof. C. A. Doremus, in his usual pleasant manner, as follows:

Dr. W. C. Siegmund received the gold medal of the Board of Trustees for the best general examination.

Dr. W. R. Fleming carried away the Alumni Association prize, consisting of a set of books for the second best general examination.

Dr. R. W. Hewitt received the gold medal of the faculty for the best practical examination as recommended by the committee appointed for that purpose, consisting of Drs. Thomas Giffen, Herbert Neher of New York and L. McLean of Brooklyn.

The anatomical prize of the senior class was gained by Dr.

R. F. Moore and the junior prize by Mr. W. Grützman of Richfield, N. J.

The College Association prize was awarded to Dr. J. O. George, who delivered the valedictory address.

The address to the class by Prof. Austin Flint, M.D., proved

one of great interest and was thoroughly enjoyed by the large audience. The opening prayer and benediction of Rev. W. B. Barrows completed this most pleasant evening's entertainment.

NATIONAL VETERINARY COLLEGE.

This institution held its second annual commencement on the 19th of March, 1894.

Fifteen seniors passed the examination and received the degree of D.V.S. (Doctor of Veterinary Science). Dr. Walter J. Stewart of Baltimore, Md., received the medal for the best general examination. Dr. A. G. Potter, of Adams, Mass., and Dr. O. B. Hess, of Pennsylvania, passed with honors in majes-cules. Prof. D. E. Salmon, President of the Board of Trustees, conferred the degrees, and Prof. C. B. Michener, Dean of the Faculty, addressed the graduating class.

KANSAS CITY VETERINARY COLLEGE.

At the third annual commencement the following formed the graduating classes for the sessions 1892-94 and 93-95:

CLASS OF 92-94.—John H. Pitcairn, Minneapolis, Kas.; John Bell, Coalvale, Kas.; Dillard Ricketts Moscow, Mo.; Emele Pouppirt, Denver, Col.

CLASS OF 1893-94.—Clarence A. Atwood, William L. Elliott, Benjamin F. Kaupp, George M. Needham, William H. Rudrauff, Jr., Henry R. Thompson, James H. Cock, Albert A. Immel, William T. King, Scott W. Peck, John E. Topping, John O. Young.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

The annual commencement of this institution took place on the 21st of March, 1894, and the following gentlemen received the degree of V.S. (Veterinary Surgeon):

Sylvester H. Dean, Grand Forks, N. Dak.; David B. Den-nish, Trenton, N. J.; William M. Fleischman, Westchester, N. Y.; William Gall, Aberdeen, Scotland; Reuben C. Gross, East-

mont, Pa.; Elias A. Gruver, Hellertown, Pa.; Patrick J. Hogan, Minesville, N. Y.; Peter T. Keeley, Waterbury, Conn.; John A. J. Kiernan, Jersey City, N. J.; Wesley Massinger, Chalfont, Pa.; Elijah Mathews, Jersey City, N. J.; Frank A. McCullough, New York City; Bruce McKay, New York City; William H. Newton, Dunham Basin, N. Y.; Russell Orborne, Wilkesbarre, Pa.; John C. Petersen, Copenhagen, Denmark; Harry C. Shoemaker, Philadelphia, Pa.; Alfred J. Tuxill, Auburn, N. Y.; Edward E. Vaughn, Browns Mills, N. J.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, on Wednesday evening, October 25th, at 7.30 P.M.

Dr. Burr being absent, the Vice-president, Dr. Winslow, occupied the chair.

The members present were Drs. Blackwood, Ferguson, Howard, Lee, Marshal, Parker, Soule and Winslow. After the minutes of last meeting were read, Dr. Blackwood moved that they be accepted as read. Seconded by Dr. Howard. Carried.

Dr. Marshal wanted to hear from some of the members present on the subject of advertising. Dr. Becket had promised at last meeting to have some objectionable matter rectified.

Dr. Howard wanted to hear an expression of opinion from Dr. Lee on the matter.

Dr. Lee did not know that he has anything to say on the matter. Dr. Becket, of course, has his own opinion, and can speak for himself. He was sorry if the society did not believe in what he had done; he could not change his opinion, however. He further said, the veterinary profession had been compared frequently with the medical profession. Personally he does not think they are to be compared. In most cases in veterinary practice it is merely a matter of dollars and cents, in

the same way as the practice of law or banking or plumbing or the selling of groceries is merely a matter of dollars and cents. He does not see that there is any practical difference between the veterinary profession and these other money-making schemes.

Dr. Marshal was surprised that Dr. Lee looked upon the veterinary profession as a trade and not as a profession. It would put a stop to all advancement if we all believed as he did.

Dr. Howard thought Dr. Lee's statement was different from what we are used to. It is not usual to consider it only equal to a trade such as selling groceries or plumbing. Many have worked years to benefit the profession, and we have all benefited by it financially and stand better in the community in every way in consequence. Article I in the constitution says that one of the objects of the association is "to use its influence for the advancement of the profession both as a body and as individuals," etc. If our association has a constitution why not live up to it.

Dr. Rogers did not think any member will agree with Dr. Lee. He would know what it would mean to all of us if the profession was reduced to the level of dollars and cents. He was really surprised at Dr. Lee. Others, and even Dr. Lee himself, have striven to elevate the profession; he did not think Dr. Lee means all he says. Dr. Lee should have time to reconsider the position he has taken.

Dr. Lee repeated that he had meant all he had said. Veterinary practice was not the same as medical practice; it could not be compared to it; it was entirely a business transaction.

Dr. Ferguson thought there is a higher plane than any so far expressed; when it is considered merely as a matter of dollars and cents it lowers the profession; we should try to elevate it, not lower it. He considered the rise of the profession in Cambridge a good illustration of the rise of the profession in the country.

Dr. Parker thought the two professions were very closely allied, and the closer they were brought the better it would be

for both. The medical and veterinary professions are inseparably connected with each other, and the bonds are growing closer all the time. We all know that many diseases are intercommunicable, and in many cases the medical profession have to call on the veterinarian to aid him. If the profession is reduced to a trade, if it is made merely a matter of dollars and cents, it will ruin the profession; it will have fifty years work to do over again, and *the highest and best of the profession would be lost*; if every one looked at it in that light we would have *no scientists*; we would have *no advance*; we would be at a *standstill*.

Dr. Lee did not think the profession should be surrounded by sentimental ideas any more than the business of a banker, lawyer, analytical chemist, or a sanitary plumber. He did not mean to lower it, but other businesses besides it have done good to the people in general. The discussion began by criticisms on business methods; there was a popular prejudice against innovations of any kind. The man who introduced any innovation meets with opposition. In other businesses they are not hampered with codes, and he feels he should not be dictated to as to how he should conduct his business.

Dr. Blackwood said if Dr. Lee wishes to compare it with other professions, let him do so, and he will find that even the blacksmiths have their code; if he does not believe it, let him join the union and see.

Dr. Howard said that veterinary practice cannot be compared with business, because the science is not a *positive* one. If a person is driving along the street and his wheels get caught in the car-tracks, and he has a "smash up," he can go to a blacksmith, who will tell him how long, and what it will cost to have it repaired. On the other hand, if his horse goes lame, it is often hard to tell where the lameness is, not to speak of the cost of repair; he may have to call in some brother practitioner in consultation. The second may have an entirely different opinion from the first. What would be the result without "ethics?" Dr. Lee had compared the veterinary profession

with plumbers. Who drove plumbers into sanitary science but the medical profession? Then he compares our profession with chemists. Whoever saw a prominent analytical chemist putting out advertisements saying he would do business for so much. It is the same with prominent lawyers and theologians. All professions have either a printed code or an implied code; most of us do not need a code to go by; we have instinctive knowledge of what is right and fair. Continuing, Dr. Howard said, we don't dictate when it comes to the actual practice of the profession; we don't dictate as to the medical or surgical treatment of cases; we only ask that a member should comport himself reasonably to other members of the profession.

Dr. Lee said that in those trade associations where members have to work so many hours a day, a man is fined when he disobeys. In the veterinary profession if every visit should be charged so much, it would be a great benefit, but as things are now charges are not adhered to; bills are lumped and contracts made, and until the profession advances to the point of having schedule of prices, until some arrangement comes he does not see why he should be charged with being dishonest.

Dr. Howard: Dr. Lee says, "Until we have advanced to the point of having a schedule of prices." That is not advancing; who can say I should not give my services for nothing as a charity. It is not advancing; it is going back to have a schedule of charges.

Dr. Ferguson was glad the subject of contracts had been brought up; when he first went to Cambridge, travelling quacks were selling their medicines to the large stables; he did not know how to get round them. After a good deal of consideration, he went to the large stables and got a contract with them; they to furnish medicines and a pharmacy; he got all the way from \$4.50 to \$7.00 a horse.

Dr. Rogers thought contracts make it much harder for young men to get started; he knows where he might have got work if it had not been for contracts.

Dr. Howard thought that was a good point; he did not see

how a young man is to get work against contract work ; he asked Dr. Ferguson if he would be willing to give up contracts when fakirs were frozen out. Older men should not be jealous if young men are called.

Dr. Rogers thought young men could often underbid older men ; he had had chances to do so, but had not done so because he had not thought it right.

Dr. Ferguson said, if there had been no quacks, there would have been no contracts.

The meeting then adjourned.

JOHN M. PARKER, *Secretary*.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, on Wednesday, November 22d, 1893, at 7.30 P.M., the President, Dr. Burr, in the chair.

The members present were Drs. Becket, Blackwood, Bryden, Burr, Emerson, Towle, Howard, LaBaw, Marshal, Osgood, Parker, Rogers, Simpson, Winchester and Dr. Stickney, honorary member.

The minutes of the previous meeting having been read and approved, the chair called for report of delegates to the Chicago meeting.

Dr. Emerson reported that the attendance was large and the papers good.

Dr. Winchester said that delegates from France and Australia were present. Massachusetts was well represented, as were other States. Some of the papers and discussions were of the greatest interest. The matter of advertising had also been taken up, and was at present receiving the attention of Dr. Hoskins. Instead of the present illumination, the seal of the association will be used for letter-heads and envelopes ; this change will not be made until the association becomes incorporated, when the seals will be distributed for the use of the members.

Dr. Becket said that Dr. Winchester had pretty well gone over the ground. There was some good papers on "Tubercu-

losis," especially one read by Dr. Clement, of Baltimore, who gave an exhaustive *resume* of experiments; another by Dr. Pearson, of Philadelphia, who discussed the action of tuberculin. In speaking of the specific reaction, he said that in some animals there was no specific rise in temperature from the tuberculin; these were mostly cases where the disease was well advanced, and in these cases so much tuberculin was already in the system as a result of the disease that the few grains introduced did not create any particular disturbance; on the other hand, in the cases not so far advanced, the specific reaction was pretty constant.

Remarks were also made by Drs. Bryden and Osgood, both of whom had been greatly impressed by their visit to the White City.

Dr. Howard then moved that the report be accepted and the committee discharged with thanks.

Dr. Marshal seconded the motion, which was carried unanimously.

The secretary then asked the members to volunteer for papers for the ensuing meetings.

Dr. Simpson offered a paper on "Digitalis" for the January meeting.

Dr. Osgood moved that Dr. W. M. Simpson be asked to contribute a paper at the February meeting. Seconded by Dr. Blackwood. Carried.

Dr. Charles Simpson then asked for information as to whether cities are forced to appoint veterinary surgeons as inspectors. In Somerville an inspector had been appointed who was not a veterinary surgeon.

Dr. Osgood explained that if an appointee was unsatisfactory to the Board of Cattle Commissioners they could remove and appoint any one they wished at a salary of not over \$500.

Dr. Howard then rose and said at the last two meetings the subject of ethics had been thoroughly discussed; a great deal had been said on the subject, and he would now like to offer a resolution.

Dr. Rogers thought it would have to lay over till next meeting to allow due notice to be given.

Dr. Howard wanted to know from the president if it was not in order to consider it at the present meeting.

The chair decided that it was in order, and could be offered at this meeting.

* Dr. Howard then said that the question of ethics had been brought up for discussion and certain members had been severely criticised. The association has so far taken no action on the matter, and so he brought forward the resolution to express his feelings on the matter, and to enable the association to put itself on record on the stand taken by Dr. Lee. At the last meeting advertising was fully discussed, and attention was particularly called to one particular advertisement in the press. At that time Dr. Becket said that that advertisement did not receive his sanction. The other day he noticed the advertisement referred to was still in the paper. Consequently he introduced the resolution and saw no reason why it should not be presented.

Dr. Becket then said in reference to the last remark of Dr. Howard's, that he regrets it, and admits he has been negligent in not attending to the matter. It shall, however, be attended to at once. He does not sanction it.

Dr. Howard was pleased to hear what Dr. Becket said, as it practically sanctions the gist of the resolution, which is as follows :

Whereas, The question of ethics having received a full discussion, and in that discussion the methods of advertising of certain members having been severely criticised, be it therefore

Resolved, That this association hereby expresses its censure of the promiscuous advertising of the Boston Veterinary Hospital, and commend such management to a sincere consideration of the proper observance of our code.

Dr. Winchester moved that the resolution be accepted. Seconded by Dr. Blackwood.

Dr. Howard then pointed out that if the resolution is adopted by the association, it puts on record its condemnation of such advertising; on the other hand, if it does not adopt them, it puts itself on record as not condemning such advertising.

After some discussion, the chair put the resolution, which was carried.

Dr. Rogers then showed an interesting specimen of partial fracture of the sixth cervical vertebræ. The horse had been found in the morning with one of his hind feet caught in his halter rope. He was afterward unable to lift his head more than about eighteen inches from the ground. He was killed two months afterward, when the bones were found in the condition showed (fracture of lateral processes).

JOHN M. PARKER, *Secretary*.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, on Wednesday, December 17th, 1893, at 7.30 P.M., the President, Dr. Burr, in the chair.

The members present were Drs. Becket, Bryden, Burr, Carlton, Emerson, Howard, LaBaw, Marshal, Gsgood, Parker, Rogers, Sherman, Winchester and Winslow.

The minutes of the previous meeting having been read, Dr. Osgood said he wished to make a correction; in answer to Dr. Simpson's question about the appointment of inspectors he had said that the original appointment lay with the cities and towns. The inspector need not be a veterinary surgeon. If he was not satisfactory to the board, however, he could be removed by them, and another inspector appointed at a salary of not over \$500 per annum. With this correction, the minutes were adopted.

The secretary then read a letter from the new *Veterinary Magazine*, asking the support of the association.

Dr. Osgood moved that the new journal get copies of the society proceedings as well as the old journals, the AMERICAN VETERINARY REVIEW and the *Journal of Comparative Medicine*.

Dr. Carlton then read an interesting paper on "Homœopathy as applied to Veterinary Medicine." In the discussion which followed, Dr. Winchester said that he had never "hung up his

shingle" as a homœopath; at the same time, he is a firm believer in small dosage; one of the most useful drugs he has used is *veratrum vivide*; he has used it for a number of years for all sthenic troubles, and all sthenic febrile conditions from whatever cause, in small doses, repeated frequently. In speaking of the difference in the action of drugs in different cases, he said that he had a 16000-pound horse that morning sick with azoturia; he had given a hypodermic injection of a two-and-a-half grains of morphine and less than a grain of atropine at 10 A.M.; at 4 P.M. the horse was "blind as a bat." At other times he has given as much as forty grains of morphine and five grains of atropine, and has not had the same results; on the other hand, he has seen a horse crazy from a grain-and-a-half of morphine and a quarter-of-a-grain of atropine.

Dr. Carlton thought the result in these cases was due to the atropine being in excess.

Dr. Winchester said it is a fact that we can give some horses proportionately a much greater amount than others.

Dr. Osgood thought Dr. Winchester gave an excessive dose in combination; he had never seen a horse get five grains of morphine and one grain of atropine without going crazy. The combination intensifies the action of both drugs. In the horse, opium has the same action as belladonna.

Dr. LaBaw cited a case he had seen in Springfield with Dr. Osgood, who had given a grain-and-a-half of morphine and three-quarters-of-a-grain of atropine in two doses. When he (Dr. LaBaw) arrived, some time later, he found the horse pressing his head against the wall with dilated pupils.

Dr. Osgood believed that in aconite, small doses repeated, are better than large ones. After some further discussion, Dr. Winchester moved that a vote of thanks be given the essayist. Seconded by Dr. Winslow and carried unanimously,

Dr. Bryden then read an interesting paper on "Quittor." In the discussion which followed, Dr. Bryden said that the average time he allowed for a true quittor to heal was seven months.

Dr. Marshal said that when he was with the street railroad

company he had had a great number of cases of quittor. These cases were treated with sulphate of copper injections and poultices; he had not found it necessary to treat any horse for seven months. They had usually good results.

Dr. Bryden said it was not fair to take a number of cases and bunch them; the history, in each case, should be considered separately. Where tissue changes have gone on, it was impossible for them to heal in a few weeks.

Dr. Howard asked the essayist, if he keeps the horse at work or if he poultices and lays still.

Dr. Bryden said that where the horse is not lame he poultices and works.

Dr. Sherman said his treatment consists in paring away all the horn in the neighborhood of the sore; he puts shoe on and does not touch the sinus. Whenever he has probed and injected he has had more trouble. He simply keeps the hoof away from the shoe and the case gets well.

Dr. Bryden explained that he considered true quittor to be where there was a condition of hoof where the tissues are confined and degenerated, not so far as necrosis, but a certain amount of degeneration has gone on and the circulation is dammed back. Then when by the removal of horn and softening of the foot by poultices, the obstruction to the circulation is removed, the tissues spring back into life again. If a bird's plumage is removed it is impossible to make them grow in a day or two. In the same way, if a foot is confined, and the coronet tight, the tissues below are interfered with, a process of degeneration goes on, cartilaginous changes set in, and the cartilage becomes hypertrophied. He thought the pathological changes in the foot ought to be thoroughly studied.

Dr. Winchester referred to a paper read at the meeting in Chicago, where the fistulæ was due, not to external violence, but to external causes; he thought that is what takes place in the form of quittor referred to by Dr. Bryden. He referred to a case of sidebones he had treated on Dr. Bryden's theory with excellent results.

Dr. Howard remarked that they all admitted that quittor could arise as Dr. Bryden described; some of those present seemed to think that it was only one form of quittor; according to Dr. Bryden it is a matter of faulty diagnosis.

After some further discussion, the meeting adjourned with a hearty vote of thanks to the essayist.

JOHN M. PARKER, *Secretary*.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

SAN FRANCISCO, CAL., March 14, 1894.

On the above date the California State Veterinary Medical Association held its regular quarterly meeting at the Baldwin Hotel, San Francisco, Cal., at 7:30 P. M.

The meeting was called to order by the President, Dr. H. A. Spencer.

Owing to the absence of the Secretary, Dr. D. F. Fox was appointed secretary *pro tem*.

Upon roll-call the following named gentlemen answered to their names: Drs. Maclay, Spencer, Sr., Spencer, Jr., Wadas, Orvis, Pierce, Robin, Williams, Forrest, Jackson, Hogarty, Eddy and Fox; visitor, I. B. Dalziel.

On motion by Dr. Maclay the reading of the minutes of the previous meeting was dispensed with, and they were adopted.

The President then delivered his inaugural address, which was very highly appreciated by the members present.

Under the head of reading of papers, discussions, etc., Dr. H. F. Spencer read a very interesting and instructive paper on "Purpura Haemorrhagica." The discussion was opened by Dr. Maclay. He highly recommended the use of cold applications to the swellings; he said there was no similarity between the subject under consideration and lymphangitis. The subject was further discussed by Drs. Orvis and Forrest.

Dr. Pierce was then called upon to entertain the meeting with a paper, which he did by reading an essay on Parturient Apoplexy.

The discussion was opened by Dr. Wadams, who recom-

mended for treatment croton oil and stimulants. Dr. Spencer, Jr., also recommended stimulants. Dr. Orvis suggested that different treatments should be given to different veterinarians, and let them try them and report to the association. His idea of treatment is hyposulphite of soda and injections of stimulants, as alcohol, nux vomica, etc. Dr. Jackson has been very successful with the use of nux vomica and belladonna, followed two days after by purgatives and enemas. Dr. Pierce said he had used sulphate of eserine with success. Dr. Forrest also favored the use of stimulants.

Dr. Maclay spoke on the pathology of the disease; he thought the vascular system should receive more notice than the nervous system. Dr. Spencer, Jr., was of the opinion that the disease was not an apoplexy. Dr. Maclay said he heartily agreed with Dr. Spencer.

There was considerable more discussion on this point, which all tended to show that all of the members had reached the conclusion that the term apoplexy was nothing more than an "asylum ignorante."

The President then closed the discussion with a few well-chosen remarks.

As Dr. Archibald was not present his paper was read by Dr. Fox, the subject being, The Sympathetic Nerve System; or, Why Orificial Surgery should Cure or Affect Most Chronic Diseases, explained from an Anatomical and Physiological Basis. The paper was well received, and was discussed by most of the members present.

The President, in closing the discussion, mentioned a number of cases where he had seen good results from the application of orificial surgery in the human family.

Under the head of new business, Dr. Maclay moved that a vote of thanks be extended to the essayists for the able and masterly manner in which they had entertained the meeting; the motion was seconded by Dr. Orvis, and was carried.

On motion by Dr. Maclay the Secretary was instructed to forward the result of the meeting to the veterinary journals.

On motion by Dr. Maclay a vote of thanks was extended to Drs. Archibald and Fox for the manner in which they had entertained the members at the last annual meeting in Sacramento.

The subject matter of the lost certificates was brought up and discussed, whereupon, on motion by Dr. Maclay, the President was requested to appoint a committee to look into the matter. The President appointed Drs. Orvis and Robin. Dr. Orvis requested that Dr. Spencer, Jr., be substituted in his place, as it was impossible for him to attend to the matter; there being no objections it was so ordered.

Dr. Maclay then spoke at some length on the good of the association, also on legislative matters.

Dr. Fox moved that the President appoint a committee of five on legislative matters, and that the committee be empowered to represent the association at the meeting of the State Sanitary Convention in San Jose next month; also that the President appoint himself as one of the committee. The motion was seconded by Dr. Pierce, and carried.

The President then appointed the following gentlemen on the Legislative Committee, viz.: Drs. Maclay, Spencer, Sr., Archibald, Orvis and Skaife.

The President then appointed the following-named gentlemen as essayists for the next meeting, viz.: Drs. Fox, Eddy and Forrest.

There being no further business before the meeting it adjourned to meet in San Francisco June 13th, 1894.

R. A. ARCHIBALD, *Secretary*.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

RICHMOND, VA., March 22, '94

The first regular meeting of the Virginia State Veterinary Medical Association was held at the Y. M. C. A. Hall, Richmond, Va., March 22d.

This society was incorporated by the Legislature with all the powers of a corporate body, having for its object fraternal fellowship of its members, and mutual protection and advance-

ment in the practice of veterinary medicine and surgery. Only graduates of reputable veterinary and medical schools are eligible to membership.

The following officers were elected for one year: W. H. Harbaugh, V.S., President; E. P. Niles, D.V.M., First Vice-president; J. H. Adamson, M.D.C., Second Vice-president; A. W. Swedberg, V.S., Secretary; T. A. Donaldson, V.S., Treasurer; Board of Censors—Jos. T. Bushman, M.R.C.V.S., C. P. Dixon, D.V.S., Wm. Gilchrist, V.S., H. Bannister, D.V.M., Geo. C. Faville, D.V.M.

After appointing several committees and transacting business, the society adjourned to meet Aug. 15, '94. at Norfolk.

A. W. Swedberg, V.S.,

Secretary, V. S. V. M. A.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.*

LELAND HOTEL, Springfield, Ill., Feb. 21, 1894.

The semi-annual meeting was called to order by the President, Dr. John Scott. The roll being called the following members responded to their names: Drs. S. S. Baker, G. W. Browning, G. L. Crocker, C. D. Hartman, J. W. Ireland, J. T. Nattress, T. B. Newby, Jno. Scott, and M. Wilson.

The minutes of the last regular meeting were read and approved.

The amendment to Article IV. of the By-laws as proposed at last meeting by Dr. S. S. Baker, to the effect that no member shall be eligible to vote except his dues be paid in full to date, was adopted.

The motion was made by Dr. Wilson, seconded by Dr. S. S. Baker, that the rules be suspended for the time being and applications for membership received. Carried.

The names of Dr. A. Babb, "Ch. '93," Springfield, Ill., and Dr. W. T. Gwinn, "Ch. '93," Newman, Ills., were proposed by Dr. S. S. Baker. They were elected to membership by acclamation.

* The papers read at this meeting will appear in our next issue.

J. A. McDonnell, M.D., of Chicago, was then called on for some remarks on experiments made with permanganate of potash as an antidote for morphine poisoning.

Meeting adjourned until 2 P.M.

Upon reconvening the president called on Dr. T. B. Newby for his paper on "Dentition Diseases." After a lengthy discussion and the exhibiting of several specimens the discussion of the paper was closed.

Dr. J. W. Ireland was then called on for his paper on "Acute Indigestion," and followed by Dr. Browning in his paper on "Castration of Cryptorchids."

Dr. J. T. Nattress then read his paper on "Fistulous Withers" and was followed by Dr. Babb on "Inflammation."

Bills to the amount of \$35.25 were audited and ordered paid. Motion was made by Dr. S. S. Baker, seconded by Dr. Wilson that Dr. Bower Talbot be dropped from membership roll for not conforming to the rules and regulations of the association. Carried.

A vote of thanks was extended the essayists and also the proprietors of the hotel for their accommodations.

The meeting adjourned until the next regular meeting in November.

NEWS.

AN OFFICIAL LETTER RELATING TO TUBERCULOSIS.

LAWRENCE, MASS., December 26, 1893.

To the Honorable Mayor and Board of Alderman:

GENTLEMEN.—As inspector of cattle for the city I hereby submit to you the report of my work for 1893.

I have examined two hundred and forty head of cattle, and of that number eight have been killed, and the post-mortem examinations have sustained the opinion given.

One animal killed was bought by a citizen of this city from an inspector in a neighboring town, and then sold to a third party, in whose possession it was found. The autopsy of this

animal showed marked lesions of the lungs and pleura due to the tubercle bacilli. Two others that were killed came from an adjoining town, and were intended for slaughter. One of these was so weak and emaciated that it fell in the highway, unable to rise, and the other, although with more strength, was extensively diseased.

At present there are three cows under restrictions, placed there by the Cattle Commission, and it is a question of time as to what disposition will be made of them.

There was one animal adjudged sound by one member of the Cattle Commission killed, which, upon post-mortem examination, revealed changes due to tubercle bacilli in the form of miliary tubercles in the udder,

Owing to the fact that the Cattle Commission, as a rule, condemn cattle in the advanced stages of tuberculosis, which the chairman told me was their method, there is very likely to be a difference of opinion as to its existence. This should be settled by subjecting the animal to the acknowledged test for that malady, for the law does not specify in what stage the disease shall exist. As a matter of fact it is impossible for any one to diagnose tuberculosis in certain stages, or organs of the body by a physieal examination, but with the aid of tuberculin that difficulty is removed.

In regard to the examination of the cattle of the neighboring towns that supply the city with milk, it has been found that some of the cattle, at least, have not been inspected. Some farmers who bring milk to this market are not aware that every town in this state has an inspector of cattle appointed especially to examine all cattle for tuberculosis.

The question of tuberculosis is, without doubt, *the* one that is of most importance to the welfare of the human family, since this disease causes more deaths than any other one, with the exception of cholera infantum, and even this is often due to the tubercle bacilli. The time has passed when there need be any argument as regards the danger to human life from the use of milk from tuberculous cows.

In this city for the year 1892 there were over 91 deaths from tuberculosis, or 7.2 per cent., while typhoid fever for the same year claimed 48, or 3.8 per cent. (Board of Health Report for 1892.) From January 1 to December 1, 1893, there were 93 deaths from tuberculosis, or 7.9 per cent. of the total number. (Report from Board of Health.)

It is acknowledged by the scientific world that tuberculosis is a contagious disease, and when the board of health will accept this fact and treat it accordingly there ought certainly to be a reduction in the death rate.

It is impossible to state positively how many die from the effects of tuberculous milk, but, knowing what effect that milk has, the action of the legislature, requiring an inspection of dairy cattle, was certainly a step in the right direction.

Respectfully submitted,
J. F. WINCHESTER, B.Sc., D.V.S., Inspector.

NOTICE.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

Additional copies of the proceedings of the United States Veterinary Medical Association for 1891 and 1892 having been secured by the officers, the same may be obtained at the secretary's office for the cost price of \$2 per cloth bound and \$1.75 per paper copy.

Subscription membership is still open at \$2 for the proceedings of the thirtieth annual meeting and the first International Congress.

T. J. TURNER, *Secretary*, Columbia, Me.

VETERINARY LEGISLATION.

LAW GOVERNING THE PRACTICE OF VETERINARY MEDICINE AND SURGERY IN VIRGINIA.

CHAPTER I. *Section 1.* Be it enacted by the General Assembly of Virginia, that, it shall be unlawful for any one except a regularly authorized veterinarian to engage in the practice of veterinary medicine or surgery, unless such person is a

graduate in veterinary medicine and surgery and has received a diploma subscribed by the faculty of a regularly incorporated veterinary university or college, chartered under the authority of some one of the United States, or of a foreign government recognized by the United States.

Sec. 2. No person shall engage in the practice of veterinary medicine or surgery without being legally registered, as hereinafter required.

Sec. 3. Applicants for registration must present diploma for recordation in the clerk's office of county or corporation court of county or corporation in which he resides, if he resides in the city of Richmond, in the clerk's office of the chancery court of said city.

Sec. 4. All persons holding diplomas issued by incorporated veterinary universities or colleges having a governing faculty containing four or more veterinarians are eligible for registration, and such diplomas shall be recorded by the clerk of said court in a book to be kept for that purpose, and indexed in the name of the person to whom such diploma has been granted. All persons who have been engaged in the practice of veterinary medicine and surgery for ten years prior to January 1, 1893, not holding diplomas, shall present their names with satisfactory vouchers to clerk of court. Where upon such evidence their names and vouchers shall be recorded as aforesaid. The clerk's fee for recording shall be the same as for recording a deed.

Sec. 5. No person who shall have commenced the practice of veterinary medicine or surgery since January 1, 1893, or who shall hereafter commence the practice of the same, shall ask, demand, or receive compensation for such service unless duly registered according to provisions of Section 4. Any person violating the provisions of this section shall be guilty of a misdemeanor, and shall be fined not less than fifty nor more than five hundred dollars for each offense.

Sec. 6. Nothing in this chapter shall be taken as including or affecting in any way the practice of the operations known as gelding, emasculation, spaying, or castration, as practiced upon domestic animals. Nor shall it include veterinarians residing in other states when called into consultation with resident practitioners of this state.

Sec. 7. Any person failing to comply with the requirements of this Act within three months from its passage must present diploma for recordation as set forth in Section 4.

Sec. 8. This Act shall take effect immediately upon its passage.

PRACTICE FOR SALE.

SULLIVAN, ILL., January 5, 1894.

Editor AMERICAN VETERINARY REVIEW :

I have a new hospital, well equipped and well furnished, which I want to sell cheap and on easy terms. There is no competition in the county, and it is located at the county seat, with 3,000 inhabitants. My hospital is a good one, and was built expressly for the purpose, and I have a good practice. My reasons for offering it for sale is on account of my health.

J. L. BONE, D.V.S.

CORRESPONDENCE.

RECOVERY OF CHAMPIGNON IN THE HORSE.

HAVERHILL, MASS., Feb, 19, 1894.

To the Editor of the American Veterinary Review:

In the February number of your journal, I notice a report of a case of "Champignon of a Horse," treated with potassium iodide, with seemingly successful results.

Sometime last spring I had a somewhat similar case. Three months or more after castration, the left cord was much enlarged and swollen. I cast the colt with the intention of operating. After casting and examining, however, the enlarged cord was found to be extending into the abdominal cavity, and in such a condition that operation was not thought advisable.

Later, with Dr. Winchester, of Lawrence, we decided to wait and watch progress.

Some four weeks later, the colt was turned out to pasture, where the swollen cord gradually became smaller, and in three months the swelling had entirely disappeared.

Had this colt been treated with potassium iodide, the drug would have got the whole credit, instead of Mother Nature.

Yours truly,

JOHN M. PARKER.

AMERICAN VETERINARY REVIEW,

MAY, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

A FEW MORE VETERINARIANS.—One year has elapsed since we had to record the closing of the majority of the veterinary colleges on this continent, and to-day, with two exceptions (Boston and Philadelphia), American veterinary colleges have had their commencements. With what results? In New York we have 67 new graduates, 42 from the American Veterinary College and 19 from the New York College of Veterinary Surgeons; at the National Veterinary College, of Washington, we record 15 gentlemen that received their degree of D. V. S.; the Kansas City Veterinary College numbered for the classes of 1892-'94 and '93-'95, 16; the Chicago Veterinary College graduated 65, to which, if we add, say, 100 from the States that completed their studies at Montreal and Toronto, we obtain the round figure of over 250 new veterinarians who, we are justified to suppose, will hang their shingles in various parts of the country, without counting those from which we have not heard—perhaps 100 more. What more can be said in behalf of a change or a modification in the way of graduation, or, if not that, in placing a check upon this wholesale manufacturing. It does not seem possible that the adoption of the three-years' studies can be re-enforced from those of our schools, whose motto is "business" and not "profession," no matter what may have been the action of the United States Veterinary Medical Association, or

even that regulates the admission of members to some of our State or county associations. What then? On previous occasions, the subject had been somewhat considered by the recommendation of a National Board of Examiners, but this is not without serious objections, among which one of the principal is the unconstitutionality of such a board: But if this cannot be obtained by federal legislation, why could it not by State law? Already the question has been agitated, in some; in two States at least, bills have been introduced into legislatures asking the creation of such a board with power to grant only certificates of qualification to practice in those States to graduates holding a degree from a three-years' course. So far as we know, these bills have not yet become laws, but when we consider the tide which is now growing in relation to the requirements of veterinarians, we have no doubt as to their ultimate adoption. And then the number of graduates, if it is diminished in quantity, will certainly be of better quality, and we will then, and only then, be justified in boasting of a truly American veterinary profession, even if the education was obtained from schools other than those that we have in the United States.

NEW YORK STATE VETERINARY COLLEGE.—When nearly forty years have passed since the legislature of the State of New York recognized the importance of veterinary education in granting the first charter for the organization and establishment of a veterinary college in the Excelsior City, and after completely ignoring the efforts that have been made since, and which have proved so successful in the hands of some private undertakings in sowing the seeds from which rose the American veterinary profession of to-day, the legislators of the Empire State have awoke from their almost semi-centurial lethargy and have made a call upon the State financial treasury and appropriated \$50,000 to establish a State veterinary college at Cornell University, "for the purpose of constructing and equipping buildings suitable for such college upon the grounds of said university at Ithaca."

We are pleased at this action of the legislature; we sincerely send our compliments to our worthy colleague, Prof. Law; we cannot but feel proud of this proper step, which will tend to advance the study and teaching of veterinary medicine, which must necessarily be benefited by the prestige of such an excellent university as Cornell, and we regret the expression of erroneous remarks which were written in criticising the action of the legislature. But, while we could not consider that "there is just as much sense in the project of establishing a State veterinary college at Cornell as there would be in the establishment of a State college for corn doctors," it seems to us that this boon to Cornell University for *something to establish, to build, to equip*, is an evident injustice to the work done by others, which has produced fruits which are palpable, which has given the country the largest proportion of veterinarians who helped—who did, in fact,—execute the national work of stamping out contagious pleuro-pneumonia, in the United States, whose existence is not prospective but is visible by all; whose equipment is not to be gathered, but is as perfect and thorough as it can be made under the circumstances, and whose name probably does not sound as big as that of Cornell, but is nevertheless just as highly appreciated and has just as world-wide a reputation.

This legislative grant is the second that can be found, we believe, in behalf of a veterinary college. Pennsylvania some years ago gave several thousand dollars to the Veterinary Department of the University of that State, thus adding to the funds already received for that object. New York follows in giving a handsome sum to one of her well-known and most wealthy institutions. It is more than probable that other states will follow these two examples, and that before many years are gone other State veterinary schools will be established.

Let that day soon arrive if the progress in education, the improvements in opportunities to students, the elevation of our profession, and the standing it is entitled to, is to remain always the motto of those who will be at the head of the schools.

ORIGINAL ARTICLES.

CASTRATION.

BY W. E. B. MILLER, D. V. S.

A paper read before the Pennsylvania State Veterinary Medical Association.

GENTLEMEN:—About ten days ago I received from your Corresponding Secretary, a programme of this meeting. On reading it over, I was surprised to find that I was put down at the head of the list of essayists, for a paper on Castration. It was the first intimation I had received that such was the case, or official notice that I was expected to prepare one for this meeting.

At the meeting held in Scranton, when I had the honor to be selected by our honorable president to read a paper on this subject presented by Dr. T. B. Rogers, I remarked that I would like very much to reply to some of the statements made by him, but would refrain from doing so, in his absence, out of courtesy (professionally only). I did not know that the remark would be so construed, as to commit myself to the preparation of a paper for this meeting. If, however, your president and secretary have so construed, I presume I must be bound by their decision.

Owing to the lack of time since intervening, I have been unable to prepare a paper entirely new, but will re-read one which I read before the Keystone Veterinary Medical Association, a little over a year ago; it having been somewhat revised and enlarged to suit the requirements of this occasion. It is not exactly what I would like to present before such an able and intelligent body of men as I see before me to-day, and who constitute the membership of this association, but it is facts gleaned from a long, extended practice, in this especial line, and I trust it may be at least interesting, if not instructive.

It will not be my purpose at this time, therefore, to advance any new theories, nor special methods for the performance of this, most common and, I think, the most useful of all the oper-

ations, the veterinarian, as a general rule, is called upon to perform, more especially is this true in the rural or country districts, or in localities where the breeding of animals is carried on to any great extent. I shall, however, endeavor to give you some practical points, obtained in a general way, during an experience of over thirty years, and shall also try to point out to you the many, and especially the most common complications, and their particular danger, as to the ratio of mortality.

It is unnecessary also to touch upon the anatomy or structure of the organs of generation, or those immediately related to the subject matter, that is too familiar to all of you, to require any reference to, or explanation of on my part, and I shall, therefore, proceed at once to the operation itself. Methods of preparation, complications, care, etc. There have been, and still are many methods of performing the operation, namely: Actual cautery, torsion, ligation, scraping the cords, distension and snapping off the spermatic cord (clamping, compressing the cords), and the *écraseur*. The first mentioned, the actual cautery, has been in existence in all parts of the country for many years, and still has some followers, who have not been educated up to the times, but, as it is an unnecessarily painful operation, I shall not dwell upon it except to mention that it is performed by placing hot firing irons upon and across the distended scrotum and burning through the membrane until the testicle is exposed, and then separating it from the attachment and severing the spermatic cord by the same operation or process. This necessarily makes a very severely burned wound, and as a consequence inflicts unnecessary pain.

The second, or torsion, consists in separating the membranes of the scrotal sac, exposing the testicles, and then with an instrument made expressly for the purpose, twisting the testicle upon itself until the cord is twisted off and bruised, so that hæmorrhage is usually stopped, this also has its disadvantages, in as-much as so much of the spermatic cord left within the inguinal region is affected that it fails to relax, and scirrhus of the cords will most likely result. If not, there will be a large

amount of the bruised tissue to slough off and discharge from the wounds, thus necessarily prolonging the time of recovery or endangering the patient to blood-poison, from the detention of the broken down material or confined pus.

The, third, ligation of the cords or of the whole scrotal sac, including the testicles, is in my opinion the most painful of all, this consists in tying a strong cord around the spermatic cords with its coverings, or around the whole scrotal sac. This is allowed to remain until all the sensations are destroyed and the testicles have lost their vitality, and death of the tissue confined occurs, when the entire body sloughs off. This method was followed by many operators (especially in the castration of sheep), but in late years has been almost entirely abandoned, owing to the extreme pain inflicted.

The next, or scraping of the cord, has many adherents and advocates at the present day, and is successfully employed in bulls and sheep.

This operation consists in exposing the testicles, and with a blunt instrument or dull knife, scrape the spermatic cord and its contents until it is severed, the scraping of the cord causes the blood to coagulate in the vessels from being bruised and hæmorrhage soon ceases; this method is very easily performed, and may be well considered, inasmuch as it is accomplished with very little unnecessary pain.

The next, or that of distention or breaking off the cords, is a very common method of operating at this time among the lower order of animals, such as bulls, rams, dogs, cats, etc., and in my opinion is the best and most desirable mode of operating, and is attended with fewer complications than any other; this method, however, does not seem to work well in stallions, as peritonitis almost invariably follows it. I think this is due to the fact that the stallion is endowed with more vascularity in those parts than other animals, and is, therefore, more susceptible to peritonitis. I have experimented with this method on several horses, and have nearly always had peritonitis to follow, while on the contrary, I do not know of ever having lost a bull, goat, sheep, or dog

castrated by this method, nor can I call to mind a single case wherein I had any symptom of peritonitis. I therefore prefer it to any other, and use it entirely at the present time on all the above referred to class of animals.

The next method referred to, or that of clamping or compression of the cords, is a method that has been popular for many years, and still has its adherents and advocates in nearly every section of the country. It is perhaps the most liberally practiced of any other method, its simplicity and, if properly performed, its safety, are strong arguments in its favor.

But the complications that are very liable to follow its use are such, that in my experience, I think it should give place to other and more modern methods.

The operation consists in placing wooden clamps over the spermatic cords and their membranes, and in allowing them to remain a sufficient length of time to destroy the vitality or life of the parts, and by pressure at first, form sufficient blood clots in the blood-vessels to prevent hæmorrhage. The clamps before being placed on the cord are usually covered over, or filled with a paste, in which has been placed corrosive sublimate one part, and red precipitate two parts, which is intended to act both as an antiseptic and caustic, and thus assist in the destruction of the parts enclosed within the clamps.

The danger following the clamps is, first: neglect to get them perfectly tight upon the cords, thus failing to stop the flow of blood. Second, the removal by the animal himself and consequent hæmorrhage. Third, the danger of the clamps getting within the wound in the scrotal sac, and thus as a natural consequence be very difficult to remove. And fourth, the danger of a secondary hæmorrhage following their removal at the proper time, generally about twenty-four hours after the operation. The principal complications following their use is scirrhus of the cord, produced by the distention of the cord for such a length of time that the same fails to retract when the clamps are removed and the edges of the wound unite to the severed

end in healing, or heal up around the end of the cord, as is more generally the case, thus retaining it within its grasp until recovery has taken place, with the end of the cord still fastened down to the scrotum.

I operated by this method for many years, and this was always my greatest complication. Since I abandoned their use entirely, except in cases of hernias, I have had very few, if any, scirrhus cords, but as I have operated on many thousands of bulls, sheep, calves, pigs, etc., by other methods, and seldom, if ever, had scirrhus of the cords, I cannot but attribute their presence to a very large extent from the use of clamps.

The last method to which I will at this time refer, is a combination system of compression of the cords and the extirpation of the testicles with the *écraseur*. I have used this method exclusively (except in cases of hernias) for the last fifteen years, and have had better results and more satisfaction from its use than any other method I ever employed. It is easy of appliance, rapid in performance, and comparatively perfectly safe in results.

The operation consists in separating the testes from their attachments excepting the spermatic cords, around which place the compressor or House clamp, and squeeze or compress the cords as tight as possible, this operation will bruise the blood-vessels and cause the formation of blood clots in the same. After a few seconds, sever the cords with the *écraseur* and remove the testes, allowing about one inch to intervene between the point of severance and the place whereon the compress is placed, this space will contain a second bruise or blood-clot formation, which acts as a barrier to any danger from the removal of the first or upper clamp, and thus precludes the possibility of any extensive hæmorrhage. Remove the clamp and the operation is completed, the cords will at once retract and re-enter the inguinal canals in nearly all cases, especially if the animal is standing. The edges of the wounds in the scrotum are left open and free, and the danger of the scirrhus is avoided. If the ends of the cord fail to return, they should be pushed up.

There are many instruments in use at this time with which to perform this operation, for my own part I much prefer the "House clamp" and "Miles écraseur" as they are called, having used them so long, I suppose I am prejudiced in their favor.

Many methods are employed for the purpose of securing the animals for the operation. The English hobbles, the side lines, the back strap, and in fact, a dozen other kinds of hobbles; each having its adherents and advocates. I have used them all, and I shall not question their opinions, or give any reasons why they should not be used in this operation, but I shall refer to one method of securing an animal that I think possesses many advantages over any other that I ever employed* (particularly, one namely), that is it exposes the whole inguinal region, and places the hind feet and limbs of the animal in such a position, that there is no interference whatever with the operator, and when used for the reduction of a hernia, the removal of a scirrhous cord or the castration of a ridgling is preferable to any I have ever used. I think also, it is least likely to be accompanied with complications of the breaking of the back or limbs, while casting or keeping the animal in confinement.

In ridgling castration it is an indispensable method. It consists of a combination of several kinds of hobbles, namely: a strap around the neck to which the rope is attached, as with the side line, the back-strap with rings underneath it, through which the rope passes, and four foot or small hobbles, one on each foot, and about sixty feet of rope. I have cast animals by this method for twenty-five years or more, and never had but two accidents in that time that I could claim were the fault of casting, one was a broken back, another was a broken femur, a third accident a ruptured blood-vessel, as a result of casting, would have occurred with any kind of hobbles. I shall refer to it later on.

I have also had other accidents happen from casting horses, but none when I had used the hobbles referred to above. I have no doubt many of you are familiar with this manner of

casting, and if so, you will know its value where you are compelled to throw your horse, and I will not weary your patience longer on that subject.

It will not be necessary either to dwell long upon the classes of animals we are called upon to castrate.

Those of you who live in country districts, probably have to do with bulls, rams, pigs and the smaller animals, as well as with the colts, if you make a practice of doing that kind of work, but here in the city and immediate vicinity, we have but little of that class of work, and have to operate on stallions chiefly, and it is with this idea in view that I address you.

There may be many complications attending your practice that you will be sure to find if you have not already found them; the operation will require careful and considerate attention, and theory as well as experience will be required, in order that you may be successful in its performance. One very serious complication that I sometimes meet with, is hernia, either on one or both sides, and as it is a serious condition, even when known to exist, it becomes still more so when not diagnosed. I shall refer to two of them particularly later on.

It is customary with me to always ask the person who owns a colt if he raised him, and if he ever discovered any enlargements of the scrotum when he was foaled, or at any time thereafter? If not, I always make an examination if possible, and even then you may not be able to discover its presence, if however, you know of its existence, always guard against the danger of protrusion, and cast the animal. Before beginning the operation place him upon his back and expose the inguinal region as much as possible by bracing the legs apart; reduce the hernia, if possible, before opening the scrotal sac, after which withdraw the testicle with the dartos, tunica, erythroïda, and the cremaster muscle and serous membranes (still intact and unopened), covering it, press down upon it as much as possible, and place the clamp firmly over and as high upon the cord as you possibly can, so as to entirely close the inguinal canal, this is called the covered operation. You can then remove the tes-

ticle, cutting it some distance below the clamps, or as some operators do allow it to slough off. This I do not do, believing it better to remove it at once, the clamp, however, must be allowed to remain until it sloughs off, when an adhesive inflammation will have closed up the whole of the inguinal canal to the internal ring and the hernia with it. Care must now be taken with the diet, and the animal kept quiet for a few days.

Another complication often met with, is the adhesion of the testes, this is readily overcome by dissecting out the cord and separating it above the point of adhesion ; then dissecting the testicle with the adhered parts attached, and removing the whole mass together. This operation is very similar to that performed in the removal of scirrhus cords.

Having thus hastily passed over the principal and most common operations, I now come to one which a few years ago was but little practiced, but which is now of common occurrence, but very difficult to perform, and requires both judgment and skill. I refer to the castration of cryptorchids, commonly called ridglings through the inguinal regions. It has been done often through the flanks, as I have done it myself several times, but generally resulted fatally. By the term ridgling, I mean only that class of stallions in which the testicle is in an undeveloped condition within the abdominal cavity.

(To be Continued)

TYPHOID FEVER; OR, CONTAGIOUS INFLUENZA IN THE HORSE.

BY PROF. W. L. ZUILL, M.D., D.V.S.

(Continued from page 13)

DIAGNOSIS.—It is not a difficult matter to make a diagnosis of typhoid fever in the horse notwithstanding the different forms it assumes. There is always the same general combination of characteristic phenomena. From the very onset of the disease the debility, stupefaction and œdema make typhoid fever of the

horse differ from any other of the inflammatory diseases which affect this animal.

At one time, however, this general condition was confounded with anthracoid fever to such an extent that writers have maintained that it was only a slightly different form of this disease. But the color of the mucous membranes is by no means that of anthrax fever, in which the violet color of the gums is not seen, the blood of typhoid fever having properties which are the very opposite of those seen in anthrax, which does not coagulate or oxidize on exposure to air.

Anthracoid fever always begins by a violent excitement of the animal, while in typhoid there is always a true stupefaction from the very beginning of the disease. Anthrax fever is easily produced in the rabbit and guinea-pig by inoculation, while the blood of typhoid gives no results. In all cases there are sure and simple means of distinguishing these two diseases from each other, so that a correct diagnosis may be made at the first visit, and almost all practitioners do so when they see the closed and tearful eyes of a sick animal. It is therefore only necessary to make a diagnosis of the localization of the disease. When, after two or three days localization is found upon the intestine, abdominal pains are noticed, the dung, which was at first hard, soon becomes thin and watery.

When the disease is located upon the respiratory organs, the early symptoms are somewhat obscure; after two or three days there is a slight dullness on one side of the chest, then all doubt is expelled. As regards other localizations, they are still more easily recognized, when there is congestion of nerve centers. The animals cannot support themselves, and fall to the ground; when there is founder there is then the characteristic symptoms of this disease. It is important to recognize the complication, for this fact must be taken into consideration in the treatment.

PROGNOSIS.—The prognosis of influenza, or typhoid fever, is serious, from the fact that it is contagious in its character, and tends to spread among those animals confined in those

stables into which it has been introduced; it is also serious from a pecuniary standpoint, as the inability of a number of horses to work results in serious loss to the community. In addition to these facts, a large number of horses die of this disease especially in the beginning of the outbreak; these considerations, therefore, make the disease a very serious one. In isolated cases the disease is not so serious, but is more to be feared in young than in well-matured horses. Horses that are idle, or sale horses, suffer much more from this disease than do horses regularly at work.

The prognosis will also depend largely upon the localization of the disease. If it localizes itself upon the digestive organs the animal is likely to make a good recovery; in rare instances, the patient may die from exhaustion when there is a persistent diarrhœa.

Should the disease become localized upon the respiratory organs, it is then much more serious, under any conditions, and is a very common localization in young, green, vigorous sale horses. Other complications are more or less serious, according to the organ compromised; congestion of any portion of the nervous system may soon have a fatal termination, due to interference with the function of these centers, and its influence upon respiration and circulation.

When influenza, or typhoid fever, is complicated with founder the prognosis is a serious one; it is a complication not often met with, and which will sometimes yield readily to energetic treatment, but not infrequently several months are required for complete convalescence. I had two instances of this among some green brewery stock last Spring (1893); *these horses suffered from the founder complication for over five months after all other symptoms of the disease had disappeared.*

The prognosis in other complications varies with the localization. Anasarca of the head is likely to interfere with respiration. Oedematous infiltration of the glottis terminates speedily in death. These anasarcous complications at rare intervals will take on the form of *acute suppurative erysipelalous disease*. One

case of this kind in my practice in May, '93, the brief history of which is as follows: Among the horses purchased for a brewing firm was a thoroughbred shire mare; three or four days after the purchase the leg of this animal was clipped, and a day or two after she developed typhoid fever, it being prevalent in the stable at the time. The disease seemed to expend its entire force upon the extremities, all four of which swelled to enormous proportions, were hot and painful, diffused suppuration of the cellular connective tissue developed, and the animal died of pyæmic infection in about ten days after. It would appear that the removal of a heavy coat of hair, early in the Spring, and just at the onset of the disease, caused such irritation of the parts as to cause a localization or concentration of the disease at this point.

In summing up the prognosis, therefore, it will be seen that there is abundant reason for considering this disease a very serious one; even much more serious than certain other contagious diseases which are under legal control, such as glanders and farcy. My experience with this disease leads me to think that a death rate of about 6 or 8 per cent. is to be expected, although a few years ago it was placed as high as 20 per cent.

ANATOMICAL CHANGES.—There is such a remarkable variation in the anatomical changes that they have frequently been confounded one with the other, and which for a long time tended to obscure the true character of the disease, and prevented the distinct recognition of the primary changes from those which were secondary. I shall first endeavor to point out those changes which are essential, and later will consider those which are secondary. We will first notice that the blood has undergone special and peculiar changes, which will be noticed before any other change or localization can be recognized. The disease has been described as an enteritis, or a pneumonia, due to these changes in the blood, and it was for this reason that the term typhohæmia was applied to it. In order to determine the nature of the lesions, it was necessary to keep a careful record of the conditions found in post-mortem

examinations, and to carefully separate the post-mortem from the ante-mortem changes. In those cases in which the disease has been described as the *rapid course*, the blood presents all the characteristics of asphyxia—it is black, non-coagulated, and often loaded with fat; this form of the disease is most frequently seen in very fat and plethoric horses.

Post-mortem changes are almost always present which may mislead the examiner unless he bears in mind the fact that it is the early summer months (as it is at this season that the disease mostly prevails) and that the examination has been somewhat delayed, as almost invariably happens. These post-mortem changes are even more noticeable if the animal has been confined in a close, hot place; the blood is then in an advanced state of putrid fermentation; this change is due to the fact that the animals die rapidly from asphyxia, associated with violent struggles, which conditions favor rapid disintegration of the blood. In these cases the blood is found black, non-coagulable, having a strong ammoniacal odor, and through the action of the ammonia upon the coloring matter of the blood there is found an ammoniacal compound, which stains the walls of the blood-vessels a deep red. Examination of this blood under the microscope shows many disintegrated and decolorized red blood corpuscles and putrefactive bacteria in large numbers; these have frequently been mistaken by careless or inexperienced observers as being special bacteriological elements, or have considered them as anthracoid vibriones. In this blood there has also been found hæmatoidal crystals, which have also been considered by some writers as microbes, but these are only post-mortem changes. In order to determine exactly what changes have taken place in the blood, it must be examined before death, or immediately after, before it has undergone the slightest post-mortem change. At this time it will be found to be more fibrinous, and to be richer in excrementitious matter, such as creatin, creatine, and especially urea. This coincides with, and would be indicated by the intense fever which is noticed at the onset of the disease prior to any local alteration. It is reason-

able to suppose that this extreme fever is due to the rapid combustion of tissue, and which is represented in the blood by the products of tissue waste. Why this rapid disintegration of tissue takes place I am not able to explain, nor have I been able to find an explanation by any writer. It is possible that at some future time it may be found to be due to as yet an undiscovered microbe (?). When the disease has progressed for some little time, the white blood corpuscles will be found in increased numbers, but which is relative only, due to the destructive changes going on among the red cells as already noticed. It will be readily noticed that when making a post-mortem examination immediately after death the blood is black and not coagulated; it collects in pools on the ground; by its contact with the air it absorbs oxygen and coagulates, thereby showing that it is entirely different from the blood of anthrax, or septic infection.

A genuine septic infection, however, is always possible when there has been a gangrenous pneumonia, or sloughs on any portion of the body which may easily become the seat of septic invasion; then septic alteration of the blood will be found, which, when exposed to the air, remains black and non-coagulated, the surface covered with oil drops and large numbers of septic vibriones; it is due to this fact that so many writers have continued to associate this disease with anthrax and septicaemia. Other local alterations of the disease vary as much as does the external symptomatology. An intense intestinal congestion is sometimes found; it is not so serious or so important, from a practical standpoint, as is the essential congestion (enteritis), but nevertheless is sufficiently well marked. There are cases in which the patient will succumb to this condition, which is the first stage in the evolution of enteritis, in from three to five days, and before sufficient time has intervened to permit the development of diarrhoea. The fecal contents of the gut is hard, and covered with a brownish glaze, the large intestine filled with food material. The mucous membrane is red, injected and decidedly thickened; the sub-peritoneal connective tissue,

including the intra-muscular connective tissue, is markedly infiltrated with an amber-colored serous transudate. In fact, this leakage into the connective tissue is found wherever a local lesion exists. As a general rule it will be found that localization upon the digestive organs does not have a speedy fatal termination, but rather the reverse; when these animals have lived for some time the intestinal tract is found almost entirely empty, containing only a thick yellowish liquid, consisting of hyper-secreted mucus and transuded serum. Traces of inflammation may sometimes be found on the mucous membrane of the stomach, but it is in the small intestine that the most decided changes are seen, its mucous membrane presenting the same changes as were seen in the large intestine—it is injected, thickened and infiltrated with serum. In addition to the serous infiltration, it is very plainly evident that *Peyers patches* are considerably increased in every direction, are elevated above the free surface of the mucous membrane, and not infrequently is it found that this surface has been denuded of its epithelium, which causes it to represent in a manner true ulceration, but in no respect have I been able to recognize any similarity between this and the ulceration of true typhoid fever of man. Out of the whole number of post-mortem examinations in this disease made by me in the last ten years, I have not once found a true ulceration, and my conclusions, therefore, lead me to believe that it does not exist in typhoid fever in the horse. The denudation of Peyers patches of its epithelium appears to be due to its serous infiltration, which not only permeates the whole connective tissue of the intestine, but accumulates between its two mesenteric layers, which are often greatly distended by it. The mesenteric lymph ganglions also take part in this general infiltration, they are congested, swollen and infiltrated. Throughout the whole course of the disease there is manifest a general tendency to stagnation of the blood, noticed even in the very earliest stages of the disease, if venesection is performed, by the slobbery character of the bleeding; it is this fact that explains the extensive serous transudation found in all the local

lesions, and more or less general throughout the body. These are the lesions usually found in post-mortem examinations when the local lesion, or rather localization of the disease, is on the digestive tract. In 1872, in a communication to the *Soc. Cent. de Med. Vet.*, Prof. Trasbot pointed out that in some very rare instances *small, gangrenous, superficial sloughs* were found on the surface of the intestinal mucous membrane; he found that these sloughs were confined to the superficial layers of the mucous membrane, that there were some tissues found in the small intestine, but were not frequent in the large colon. As he says, these sloughs may assume the appearance of genuine ulceration, but were entirely different from the ulceration of typhoid fever in man. When the lungs become the seat of the localization the complication is either pneumonia or pleurisy, sometimes both. A second invasion of the lung tissue in these cases is frequently seen, the animals then die rapidly of asphyxia, which the post-mortem will show, while at the same time gangrenous complications may be found. Prof. Trasbot has described this lesion as an œdematous pneumonia, and his description of these pathological changes are certainly far more lucid and comprehensive than that of any other writer of my acquaintance, and from which we obtain these facts:

“Ordinarily the pneumonia is more or less restricted, its outlines not horizontally marked as in free inflammation. At the lower part there is almost always some lesions in one of the lungs, sometimes in both, for exclusive localization in one lung is a more rare condition than in sporadic pneumonia. In typhoid fever there is found side by side veins of tissue obstructed by inflammatory transudation, and portion which have remained permeable to air. When the lungs are cut, a very marked infiltration is found in places where the pneumonia did not yet exist. There, as everywhere else, is a stagnation of blood, bringing on diffusion of the serum in the peripheric tissues, and especially in the connective tissue spaces, which enlarge in volume. There is nevertheless genuine pneumonia with exudation into the interior of the acini. At the points where the inflammation is

“localized, the lungs are dense, compact, friable, tearing easily,
“and having a granular fracture. On a smooth cut a large
“quantity of serum flows. There is also the red coloration with
“small bluish tints. By a microscopic examination the evolution
“of the lesion can be followed, and the completely hepatized
“parts studied. Besides the infiltration of the partitions we
“found in the vesicles the changes of pneumonia; that is to say,
“an amorphous exudation containing globules of pus. These
“capillaries are seen greatly distended, and around them a large
“quantity of liquid, forming in mass a yellowish clot interposed
“between anatomical structures. On the periphery the anatomi-
“cal interspaces are markedly distended by this granulous mass.
“Pleurisy may be added to the pneumonia or exist alone; in
“either case the changes developed upon the pleura, with more
“or less extension, does not essentially differ from those of an
“ordinary inflammation of this membrane. Finally, there is in
“the lungs stagnation of blood with a large serous infiltration.
“Sometimes, although the lesions of pneumonia may be but
“slight, death speedily ensues, pulmonary inflammation having
“led to gangrene. This seems difficult to explain. Small, gan-
“grenous, slate-colored, grayish foci are often found, having
“a putrid and infectious odor. In this case septicæmia has com-
“plicated the typhoid fever, because the mortified lungs putrefy,
“and there is speedy reabsorption of the septic elements and
“putrid infection.”

When there are other localizations, the changes found upon post-mortem examination vary with the complication. I have never seen a fatal termination in those cases in which the podophyllous structure was involved. These cases of this complication in my practice made good recoveries after several months of idleness, without any noticeable changes in the structure of the hoof; therefore, a post-mortem examination would not have shown any thing more than a congestion of the podophyllous structure, with perhaps capillary hæmorrhage on the surface.

When there is localization upon the brain and spinal cord,

death is usually rapid, as in the solitary case coming under my notice; here there was a well-marked congestion of the meninges with a large quantity of serum in the pia-mater, producing a great deal of pressure, which was probably the immediate cause of death; the arachnoidal spaces were filled with transudate, but no microscopical evidence of lesion in the substance of the brain proper. The congestion and transudation is as easily explained in this case as in the lesions of other parts of the body, being entirely due to stagnation of the blood current, a prominent feature of the disease.

Other rare complications of this disease are lesions which occur in the eye, all of which are evidently due to impaired circulation. The first manifestation in this organ is seen in the sub-conjunctival connective tissue, which becomes infiltrated with serum of a yellow color, intermixed with a greenish tinge, indicating a disturbance of the liver; sometimes a sudden transudation of serum, or coagulable lymph, takes place into the anterior chamber of the eye, producing an absolute blindness, which will continue for 15 or 18 days, but reabsorption is not complete until 30 or 35 days. Should the lesion be more forcibly concentrated on this organ, then, as above described, there will occur a veritable hæmorrhage into it, due to the rupture of a capillary in the ciliary plexus. These conditions occur principally in the convalescing period, after all external manifestation of the disease has passed away, and perhaps after the patient has been discharged as cured. My experience with these complications is limited to one example of plastic iritis in an animal owned by one of our most prominent physicians, Dr. E. L. Dunn, and one example of hæmorrhagic iritis in an animal owned by a wealthy sugar refiner. In each case one of our noted specialists, Prof. Earlan, was in consultation, and appeared to be extremely interested. These cases made a good recovery in from 28 to 30 days. M. Decroix has described a case of instantaneous and complete amaurosis, a lesion quite as easily explained as either of the others, as being due to an infiltration, or hæmorrhage, into the retina.

A complication which is sometimes seen is a general dropsical infiltration into all the depending parts, the head, extremities, belly, etc.; these will sometimes reach enormous proportions, and as ecchymotic spots appear in the conjunctiva, Schneiderian mucous membrane, and other parts, care must be taken not to confound it with purpura hæmorrhagica.

(To be Continued.)

ODONTOME IN A YOUNG FOAL.

BY DR. W. L. WILLIAMS, Montana.

In a former paper* of some length we had occasion to cite a considerable number of cases of odontomes of the horse, representing nearly all variations in aberrations of the tooth follicle, all of which cases, barring one, had been developed in animals varying in age from a little less than a year to about 6 years of age. In the present case the age of the foal at time when the disease was first noted is, so far as our observation is concerned, or cases noted by other writers, somewhat unusual.

The subject was a full-blood French draft horse foal of unusual size and quality, born May 1st, 1893, property of S. N. K., Normal, Ill.

The dam was a profuse milker, and rearing the foal being her exclusive duty, it made a very rapid growth and was in excellent general health.

The foal continued well up to August 1st of the same year, when the owner noted some difficulty in breathing during exertion, which was at first attributed to strangles.

The dyspnœa rapidly increased until August 14th, when the foal, accompanied by the dam, was presented for examination and treatment.

The foal was yet in good condition and general health. The dyspnœa had become so pronounced that the breathing

* "A Clinical Study of Odontomes."—AMERICAN VETERINARY REVIEW. XV. 1.

could be readily heard more than a hundred feet away when foal was at rest.

The left side of face was greatly bulged, projecting fully one inch farther outward from septum nasi than did the opposite side, the bulging being most exalted along the zygomatic ridge well back in the malar bone. The left air passage was wholly occluded, respiration being carried on through the right nostril and, in a measure, inspiration through the mouth. The right facial region exhibited normal resonance, while the occluded left side gave *a very marked increased resonance*. In the article cited* we casually noted that in some cases of odontomes abnormal resonance of the affected part happened in some cases. A further study of the matter leads to the conclusion that, so soon as a follicular cyst or composite odontome acquires a considerable volume within the facial sinuses and encroaches upon the communicating foramen between sinuses and air passages, and before the cyst becomes broken down by suppurative process, the imprisoned residue of air within the invaded sinuses is augmented in volume, and markedly compressed by small additions from the air passages, the return to which is prevented, thus producing increased resonance on the affected side of the face. This augmented resonance is in direct contradiction to the recorded observations of our writers on veterinary surgery who hold that diseased facial sinuses show decreased resonance, a rule which has at times led us to trephine the wrong side of the face in cases of this kind.

There was no discharge from the nose, and no odor. We at once diagnosed a follicular cyst, and gave a favorable prognosis.

We trephined the face at about the union of zygomatic and maxillary bones in or a little inferior to the zygomatic ridge, and upon removing the excised bone found the sinus free from pus or other liquid, and no apparently diseased tissue in sight. Directly inwards, however, and separated from the facial bone by a distance of half an inch, an apparently healthy, smooth,

* "A Clinical Study of Odontomes."—AMERICAN VETERINARY REVIEW. XV. 1.

yielding wall prevented further ingress. Thrusting a finger through this wall, about $1\frac{1}{2}$ pints of a pale reddish-yellow fluid gushed out, which at once relieved the dyspnœa. The cyst wall, corresponding in general shape to the walls of the maxillary sinus devoid of all partitions (these having been absorbed from pressure), was attached at the inferior part only, at about the position of the fifth molar follicle. The cyst was drawn away in pieces by means of dressing forceps, the operation being accompanied by profuse hæmorrhage.

At the most dependent or anterior portion of the sinus (which had been much extended beyond the normal size and position by the pressure), a free opening was made into the air passage into which a good sized aseptic pledget of cotton was firmly pushed from the sinus. The sinus was then filled with cotton saturated with carbolized oil, with powdered iodoform over surface of pledgets. After 24 hours the dressing was removed, the parts scrupulously washed and the dressing repeated. After 48 hours the plugging of sinus and external wound was discontinued, the tampon in opening between sinus and nostril being continued two or three days longer to avoid adhesion. Aside from tampon, the dressing consisted of powdered iodoform mixed with about equal bulk of powdered starch (by which the iodoform is more readily finely divided and more equally applied), and applied to sinus by means of a small powder bellows.

Within 5 or 6 days it was seen that the iodoform caused large hard incrustations to form within the sinuses, and it was replaced with carbolized oil, the openings, both facial and between sinuses and nostril, being left free. All secretions were discharged through nostril, but at no time were these of considerable amount.

After about 10 days, while all was going along as favorably as was at all possible, the foal contracted strangles which affected the progress of the case unfavorably. Submaxillary abscesses formed and discharged freely, the disease running a typical and reasonably severe course.

At 30 days after beginning of treatment the strangles had subsided, bare traces remaining, while the effects of the odontome had almost wholly disappeared. The bulging of face had almost completely vanished, discharge from sinus had ceased, the trephine opening had closed and the foal left the infirmary in excellent general health and in better flesh than at the beginning of treatment. The recovery is apparently permanent and complete, leaving no noticeable unsoundness or blemish.

The cyst wall, upon microscopical examination, presented on its outer side an appearance identical with the lining membrane of sinus, while inside it was lined with a firm, thin opaque white corrugated membrane. Its thickness varied, but generally was about 1-8 and 3-16 inches in diameter, soft and flexible at most parts but at others somewhat cartilaginous, and in places exhibited a hardening, indicating some movement toward the formation of dental tissue.

MODERN ADVANCES IN SCIENTIFIC SURGERY.

BY L. A. THOMAS, D.V.S., Atlantic, Ia.

A Paper Read before the Iowa State Veterinary Medical Association.

During the past few years a complete reformation has been gradually taking place in the science of surgery; conditions and methods handed down from generation to generation have become obsolete; many which but ten years ago were advocated as necessary to the maintenance or restoration of health have been completely discarded from the annals of modern surgery, and are now looked upon as injurious or detrimental to successful surgical interference.

We have arrived at one of those epochs in the history of veterinary surgery from which a departure is taken, either in relation to its practice generally, or in the development of some special department. Among the most important of these epochs, so far as the general improvement in veterinary surgery is concerned, are those marked by the appreciation of the rules

of scientific hygiene and the methodical employment of antiseptics in the management of wounds; the treatment of which, whether accidental or inflicted with the surgeon's knife, has been rendered much more successful since the advent of antiseptis.

Many of the details of the antiseptic method may be varied in the course of time, and by the introduction of new chemical agents, but the grand principle which underlies it, and upon which the whole superstructure of its details is built, will remain intact and unchangeable.

It is not my intention to enter into an exhaustive discussion upon the relative value of one or another of the numerous antiseptic agents now in use, as you are doubtless familiar with them; but we may here glance at the fundamental principles calling for antiseptic procedure.

In the first place, we should remember that the decomposition of fluids in wounds is directly dependent upon impregnation with organic matter floating in the air and thence deposited, or in other ways conveyed in them, fermentative or putrefactive changes being thus at once set up in the fluids of the wound; these local actions are capable of producing general septic infection of the fluids of the body.

The active agents of decomposition are the micro-organisms, which will develop at once their disintegrating activity as the conditions favorable to their development (moisture and a certain temperature) are present. An accidental or surgical wound presents conditions eminently favorable for the development of the fungi in question—the oozing blood and lymph, the bruised and dead cells of the various exposed tissues, severed from their natural connections, furnish the moist pabulum of a proper temperature. The myriads of particles of filth or dust filling the air in all inhabited localities contain, according to indubitable evidence, a very large proportion of spores falling upon the wound and its secretions; these promptly develop into fungi, and at once set up a fermentative process known as decomposition. The products of this fermentation, more or

less highly poisonons, promptly sets up local changes in the shape of inflammation, and cause systemic trouble—that is, septic fever.

It is further necessary for us to know that in septic process of a wound, not only the ptomaines are absorbed by the lymphatics, but that often an invasion of the living tissues by the fungi will take place, and that the lymphatics and veins will also serve as channels for the importation of dangerous quantities of fungi into the circulation. Secondary deposits will then easily occur.

It is this doctrine that has revolutionized the practice of modern surgery; the details by which it is carried out are necessarily changeable, but the principle itself is immutable, for it is based upon direct experimental observation.

Realizing the foregoing conditions, all surgical interference, no matter how trivial a nature, should be performed under strict antiseptic precautions. Admittedly in veterinary practice, there are many almost insurmountable difficulties, not the least being the habitations of patients. In many respects these may be overcome or reduced to a minimum, the all-important factors being cleanliness, good drainage and ventilation; of which the surgeon should assure himself by personal examination. To solicit discussion on this topic, rather than with the view of routine practicability, the following outline of the minutia of an antiseptic operation may be of interest; trusting that we may thereby appreciate the fact that asepsis is not an impossibility in veterinary practice, and that many of the more important items may be easily carried out with the expenditure of a little care and time.

All instruments should be placed in a steam sterilizer and steamed for at least half an hour, then dried with a clean cloth and rolled in a linen wrapper, made for the purpose, and previously sterilized and dried. The instruments are then ready for use at any moment. In the absence of a sterilizer, boiling may be substituted. The silk sutures should be rolled upon glass spools or tubing of convenient size, and boiled in a 5 per

cent. solution of carbolic acid for half an hour, then in plain sterilized water for fifteen or twenty minutes, after which they should be placed in a small sterilized glass jar having a screw top, and covered with 95 per cent. alcohol. Rubber drainage tubes, when required, should be prepared in the same manner. About five yards of cheese cloth should be procured and boiled in a like manner to the silk sutures, after which it may be wrung out and dried in an oven, packed in a sterilized fruit jar, and the top screwed on tightly.

The use of cat-gut sutures is not satisfactory, as they can seldom be made aseptic without detracting from their strength. Indeed, there is no call for them, for if the silk sutures are properly prepared, they will be rendered non-irritant and become encystic. Silk-worm gut is often useful, being unabsorbable, and readily rendered aseptic by immersion in 95 per cent. alcohol for a few days, in which condition it should always be kept. The actual cost of these preparations need not exceed fifty cents, and about an hour and a half leisure time, when sufficient material may be prepared for a large number of operations.

When an operation is to take place, a sufficient amount of water should be boiled and strained through a piece of the prepared gauze, and allowed to cool, ready for making the required solution and washing.

If the animal is to be cast for the operation, a place should be selected as free from dust as possible, the bed prepared of fresh green straw, freely sprinkled with a 5 per cent. solution of carbolic acid, or preferably, covered by a canvas stack sheet, saturated with the same solution. After the patient is secured, the anæsthetic may be administered, the parts to be operated upon and surrounding surface should be thoroughly scrubbed with etherial soap and water, then shaved and washed with ether. A fountain syringe, containing a 2 per cent. solution of carbolic acid, or bichloride of mercury (1 to 5000), should be situated so that a continuous stream may play over the seat of operation.

These preparations having been made, the operator and his

assistant should thoroughly scrub their hands, and invest themselves in a clean rubber or cloth apron before proceeding. All instruments required should be placed in a tray, or clean basin, and covered with 3 per cent. solution carbolic acid; another basin should contain sterilized gauze cut in convenient sizes for sponging; a third, containing sterilized water, should be within reach of the operator for occasionally rinsing his hands.

Before the wound is closed, all hæmorrhage should be controlled, blood clots removed, and the surface sponged dry; the edges of the wound brought in direct apposition, and the sutures tied sufficiently tight to maintain the apposition, but no tighter.

The external surface should then be dusted over with iodoform or boracic acid, upon which should be placed several thicknesses of gauze, followed by a layer of absorbent cotton, all of which should be kept in place by a rubber bandage. Should a bandage be inconvenient, strips of adhesive plaster, extending four or five inches on either side, may be used to maintain the dressing in place. The dressings should remain undisturbed for a week, provided no fetid odor is detected. Should there be escaping serum from the wound, another layer of absorbent cotton should be applied over the old one to prevent germs from coming in contact with the serum.

For several years I have followed almost precisely this line of treatment, and have been much gratified with the results obtained. I would therefore say to those who are inclined to be somewhat sceptical, or those who have not given the subject much thought, that you have only to test it to be satisfied. But if you should not succeed the first time, do not declare the method a failure, as the failure could only have been due to neglect on your part of one or more of the important features.

PARTURIENT APOPLEXY.

BY F. E. PIERCE, D.V.S., Oakland, Cal.

A Paper Read before the California State Veterinary Medical Association.

While nearly all of the papers that have been read at our meetings of late have been on some contagious or infectious disease, I would take up a more common subject; one we all meet with very often in our practice, and one which gives us as much trouble as almost any other disease we meet.

The disease which I shall present to you for consideration is parturient apoplexy, or milk fever, the term usually applied to it by dairy men. It is a malady usually attended with fatal results, and is regarded with more dread by cattle owners than any other disease which the cow is subjected to. Some herds of cattle are more subject to it than others. The majority of cases coming under my notice have been among the high-bred Jerseys.

It is not my purpose to advance any new theory or treatment of this disease, but simply to bring out the views of the different members, through the discussion which I hope will follow.

Causes.—The causes are predisposing and exciting. Among the first may be mentioned high condition, well-fed cows, and especially large milkers, suffer from this disease, and one attack usually predisposes another. The exciting cause is the act of parturition; and from my observation, I have noticed the disease to follow a case of parturition where there has been very slight labor, and the animal being in a plethoric condition. And in my experience in getting the history, the owner says, almost always, that the cow had a very easy time calving, and cleaned in a very short time; and, also, that the appetite was good previous to calving, and from 24 to 48 hours following, while on the contrary I cannot personally call to mind one case of parturient apoplexy following a long and protracted case of parturition.

The pathology of parturient apoplexy appears to be largely a matter of conjecture, even with our leading writers on scien-

tific subjects. Some animals, having a mild attack, recover with ordinary intelligent treatment, while others having it in a more severe form, succumb, in spite of all our efforts. It is a parturient disease, characterized by a sudden suppression of milk, congestion of the brain and apoplexy. The excess of blood in the system, which before calving went to supply the foetus, instead of being diverted to the milk-producing channels, has been thrown back upon the system, and has a determination to the brain. This produces a state of coma, which has to run its course, and which terminates either favorably or unfavorably.

Symptoms.—The first symptom usually occurs in from one to three days after calving. There will be a very sudden diminished secretion of milk, loss of appetite, and rumination ceases. The respirations become hurried and plaintive. There will be knuckling at the fetlock, staggering gait, the animal sways from side to side, and finally falls, very frequently never to rise again.

Treatment.—Many remedies have been prescribed. Some are good, others are worse than useless. Order the animal well bedded, and have sacks of straw packed around her, in order to keep her well upon the sternum. If called early administer magnesia sulphate, one pound. Give enemas of warm water and soap, and, if upon examination you find that the urine is not passed freely, it should be drawn with the catheter, at intervals not exceeding six hours. If deglutition is not impaired, give stimulants at frequent intervals. If you do not get any action from your purgative, I recommend giving sulph. eserine, gr. 1, and repeat in half-grain doses every hour until $2\frac{1}{2}$ grains have been given. Apply mustard to the spinal column, and cold water or cracked ice to the head. As soon as the cow is able to rise, and her bowels have resumed their functions, give light sloppy food for a few days, and follow up for several days with tonics.

Preventative measures—Give a mild saline laxative from three to five days previous to calving, and in many instances all trouble may be avoided, thus verifying the old saying, that “an ounce of prevention is worth a pound of cure.”

REPORTS OF CASES.

A FEW DISAPPOINTMENTS WITH ANÆSTHETICS.

BY W. E. SMITH, D.V.S., Sedalia, Mo.

In presenting this article I do it with less pride than if I had made a grand discovery for the benefit of science, but from a standpoint of duty. I am prompted to take this step, hoping my experience will be of some benefit to someone like myself, who wishes to know more of the reverses of others. Mistakes and disappointments in many cases are blessings to practitioners. We are apt to tell of our good fortune and let that remain untold which has a tendency to reflect on our success. As we fulfill our requirements at college and settle down in private practice we are, figuratively speaking, alone in the world. When we are called on to perform an operation, we must take hold and secure our patient by leading in the danger we are subjected to, as our clients know nothing about our appliances.

We move on, hoping for something better in using our anti-septic agents. It is done in a very crude manner, on account of operating in or out of doors, according to circumstances. We have some large stock farms to practice on, where there is no barn nor shed. The stock is cornered against a barb-wire fence and caught with ropes. You perform your operation and turn them loose, and your success depends on the good recovery in such cases and with such treatment. Then we hope when we give a dose of medicine to come somewhere near telling how it will operate, but this sometimes disappoints us also; and when we use anæsthetics we hope for a specific action, and here we are apt to suffer defeat again.

Now I wish to describe briefly a few disappointments I have met with in the use of cocaine. The first I shall describe was a saddle-bred stallion, about fifteen hands high, weight about 1000 pounds (a pacer); he made a race record of 2.17 and a

fraction. He gave down in the tendons of both forward limbs, and was put in the stud for a few years, until reverses came to his owner, and he was sold by the sheriff to the highest bidder. He was bought by a trainer and brought to our town to be used on the track again, but soon gave way in his weak parts, so that on June 14th I was requested to fire him; I made a cocaine solution (gr. viii to 100 minims of water, always measuring with hypodermic syringe). This was injected over the tendons and back of the knees. This solution never failed in any other case for the same operation. He never became insensible to any test, not even to the touch of the finger.

So the owner wanted me to chloroform him. I procured $\frac{5}{8}$ xi, and threw him the same as in castration. Made a nose-bag, funnel-shaped, and used in it a large sponge. We tried to give him oxygen at one nostril and chloroform at the other, but this seemed not to work well, so the bag was put over both nostrils, and in due time the chloroform was all used up, and he was as wide awake as ever, although he had fought manfully all the time, and would squeal as if fighting another horse. Then we thought to fire him while he was secured. By mismanagement the benzine bottle of the thermo-cautery was broken, so he was liberated and he sprang to his feet and seemed to feel fresh; he began to eat grass with a relish.

Next day I gave a ball of chloral-hydrate, $\frac{5}{8}$ vi, and threw him and finished the job, the chloral affecting him but slightly. A few days afterward, the groom who had charge of him all through his campaign life came to see him and told me he had been cocained and etherized repeatedly to assist him through his hard races, and at no time had he been benefited in the least.

The second case was a small saddle-bred mare, 15 hands high, weight about 1020 pounds, a pacer, suffering from cartilaginous quittor of about twelve months' standing, with four fistulous openings. She being in foal, I preferred to operate standing, so I injected a solution made of 10 grains of cocaine to 100 minims of water, without the slightest effect. Having my as-

sistants ready, I wished to finish without trying any other solution of cocaine, so I gave a ball of hydrate of chloral $\bar{5}$ vi; cast her, operated above the coronary band by making five incisions from the band to the top of the cartilage, and then dissected the tissues from the cartilage from one opening to the other. With a pair of forceps and a small farrier knife, the cartilage was removed. This operation was a success and easily treated.

The third case was a large black mare about 16 hands high, weight about 1200 pounds, a pacer; she was tracked last year (1893); went lame, supposed to be due to striking her knee; she was rested and booted and tried again, and not being improved, she was turned out. Last fall she was brought in and the owner came and told me how she acted. Later on he brought her for me to see. I told him she was suffering from sidebone and then prescribed treatment. He hoped to avoid firing, so I gave him some ointment to blister with. When he took her home he applied it, but it did no good, except to develop the enlargement. So the last week in December we tried her three times with different solutions of cocaine, hoping to produce anæsthesia and fire her. The first solution was gr. vii to 100 minims; second solution was gr. xv to 100 minims; third time I took gr. xxv to 100 minims, and rubbed it in over the plantar nerve, hoping to be able to inject the needle through the skin without causing pain, and by this measure to aid the subcutaneous injection, which was a solution gr. xxx to 100 minims, and at no time would she allow us to touch her leg with a pin or bare hand, and her eyes were blinded; nor would she allow this done with a twitch on, but became very nervous and had spasmodic contractions of the hind limbs like a string-halted horse; she would kick and paw with this foot (right fore), and showed great excitement. The owner said after she was taken home she laid down and seemed to suffer as with colic. On January 1, 1894, I gave her an ounce ball of chloral, cast her, and finished my task. The ounce of chloral only had the effect of bringing her spirit down to about the level of the average horse. She was not unsteady in her gait in the least, and

she had been fasted and well prepared for casting. After she was relieved from the ropes she got right up and began to eat her bedding.

Now, I will confess I wished to get some information, so I wrote to a good friend of mine, a man who has had a large and long experience and told him of my failures. He attributed it to the solution of cocaine being old. I wrote him that the solutions were always made fresh, and in the proportion as described—the number of grains to the number of drops of water was measured by the hypodermic syringe. It cannot be said that the cocaine was not good; as soon as I had finished the last failure I went to the fire department and fired a horse with gr. iv to 50 minims for ringbone, and he was very nervous on account of being blistered twice before, but he stood still and never moved the foot until I had finished. My friend told me he had never met with a failure with 15 minims of a 10% solution.

There is a question whether more cocaine would have been better or whether more would have proved serious.

It seems novel that all three were pacers.

EXTRACTS FROM GERMAN PAPERS.

BY RICHARD MIDDLETON, D.V.S.

PELVIC FRACTURE AS A CAUSE FOR LAMENESS.

Maier examined a cow which the day before had fallen in such a manner as to cause both posterior limbs to spread from under her and diverge. The animal could not regain its feet, and the hinder extremities seemed unable to make any effort in this direction. Visibly the limbs were normal, but upon rectal examination the patient immediately exhibited symptoms of pain. One could distinguish splinters of bone right and left from the symphysis pubis upon the pelvic floor; a detached piece had even penetrated the inferior wall of the vagina. The animal was slaughtered.

In a second case a ratting cow had mounted a weak calf, which fell under the weight, and afterward showed lameness. The right hind leg was hardly placed upon the ground, and was made to take very little share in sustaining the body weight. The lumbar region was bowed as a result of the position assumed; rectal examination showed fracture of the ileum.

In a third case the lameness appeared after an easy parturition. The animal could not manipulate the right posterior limb, upon which, externally, nothing could be noted. By rotating the leg, crepitation could be plainly distinguished. Animal slaughtered.

Another cow had manifested lameness fourteen days, and became thinner. The right hind leg was favored, and the patient threatened to fall when not supported. Enlargement of the femoro-tibial articulation was plainly visible, although no pain was evinced upon palpation. A swelling was discovered by the introduced hand, upon the lateral wall of the pelvic cavity, which was of a painful character, and which proved to be a fracture of the iliac branch.—*Deutsch. Thier. Woch.*

HÆMOGLOBINURIA.

A horse developed the above affection from a drench of naphthaline. An eight-year-old Danish gelding was brought to the Dresden Clinic, with the history that the day previous he had received the above drench for the removal of colic; and that since the inhibition of this substance he had passed bloody urine.

The patient had been regularly worked, and no signs of a paraplegia of the posterior extremities was visible. After the appearance of pain the owner gave what he supposed, or at least meant, to be magnesium sulphate, but which in fact was coal tar naphthaline. Pulse, temperature and respiration remained normal; conjunctiva intensely jaundiced. Appetite wanting. Urine freely passed, and without pain, and of a dark red color; aromatic odor and alkaline reaction; specific weight 1.025. The naphthalin test was unavailing in the detection of

this drug. Aloes and Glaubers salt were given internally, with cataplasm to the loins. The condition rapidly improved.

In another case of hæmoglobinuria, paralysis was observed of the exterior muscles of both *anterior* limbs as a sequela. As developed in the clinic, this patient had shown azoturia about three weeks previous, and since that time had often fallen upon the knees, being apparently unable to manipulate the anterior muscles when moving in trot. The general state of health, as well as the urine, was at this time in no degree influenced.

When quiet and when walking no impediment of movement was exhibited; but immediately the animal was brought in trot, the above noted symptoms became prominent. Local examinations proved negative.—*Sächs. Veterinär bericht.*

SANTONIN IN THE DOG.

When santonin is given to man in doses of five to eight grains, its toxic symptoms are induced. In canidæ, this agent is generally prescribed for the destruction of round worms, and here it is administered in portions of three to five grains.

Keppel gave a dog, weighing 20 pounds, six grains in unison with one and a half ounces of oil, and increased the dose to fifteen grains within four days. The urine became deeply red in color as the dose was enlarged. Poisonous effects were, however, not present, the subject continued cheerful and retained the appetite.

A dog, weighing 13 pounds, received seven and a half grains without disadvantage; in this same case fifteen and a half grains were given, with the effect that in three-quarters of an hour epileptiform convulsions seized the animal. The same quantity again administered produced the same result, and after a few hours the patient recovered. A three-weeks-old puppy weighing $4\frac{1}{2}$ pounds, resisted the action of four and a half grains in glucose, and even nine grains failed to render the animal unconscious, producing at the most slight contractions of the muscles, staring countenance and unquiet.

In order to confirm the assertion that santonin was eliminated by the kidneys, a medium-sized dog was given seven and a half grains of santonin in some sugar. In three-quarters of an hour the urine showed an onion-red color, reaching its most chromatic effect in the purple hue after the lapse of three hours; in twenty-one hours the urine assumes again its normal color.

The same animal was made to take santonin in ol. ricini, without, however, in any way influencing the elimination of urine. Santonin dissolves but imperfectly and slowly in oleaginous fluids. Therefore, when given in these, it should be thoroughly shaken previous to administering.—*Bericht. des Vet. W. in Sachsen.*

HAIRS IN THE RUMEN OF A COW.

On the 3d of September we were called to see a very sick calf. The animal could not support its own weight, and even in the recumbent position contrived to tremble in all its muscles. The umbilicus was swollen and inflamed, and besides a high fever, the patient also suffered from an obstinate constipation.

We cleansed and disinfected the navel, making an injection in the same, and administered purgatives in various forms. Clysters yielded an exceedingly small quantity of bad-smelling feces, coated with more or less mucoid matter. On the third day, as we could distinguish no improvement, and as the subject was in good condition physically—being unusually strong and well-developed for its age—we advised slaughter.

In the rumen a ball of hair, as large as a goose egg, was discovered. Beneath the latter the gastric papillæ were in an advanced stage of inflammation, and much hypertrophied. The lymph glands along the alimentary canal were likewise inflamed; in those to be found in the mesentery, blood clots were seated. The interior of the intestinal tract was discolored here and there by hæmorrhagic diffusions. All the remaining organs were healthy, and the muscular substance in good condition; the flesh was put on sale for consumption.—*Berl. Th. Woch.* 42, '93.

REPORT OF CHAIRMAN OF COMMITTEE ON SANITARY SCIENCE AND POLICE.

BY PROF. J. J. HARGER.

Read before the Pennsylvania State Veterinary Medical Association.

MR. PRESIDENT AND GENTLEMEN:—As Chairman of your Committee on Sanitary Science and Police, I beg leave to offer you the following brief report.

Fortunately for the community, we have not had any serious or extensive outbreaks of any contagious or infectious diseases beyond the existence, to a greater or less extent, of those forms of contagious diseases which are ever present with us.

In importance, bovine tuberculosis must necessarily be at the head of the list from the influence which it exerts in the transmission of the disease to man.

We had several local outbreaks of glanders, only one of which, at Wilkesbarre, proved very disastrous in its results.

A local outbreak of Texas fever near our city has become a matter of record, but of the details and particulars I shall leave to my fellow-worker on the committee, Dr. Francis Bridge, from whose hands they must come to you in a necessarily complete and official character, as he personally investigated that outbreak.

Tuberculosis is more prevalent near large cities than farther away from them. More prevalent in dairy cattle than in other classes of cattle. Recent tests with tuberculine have shown that more than one-half of the dairy cattle of some herds are tuberculous, while in other herds the percentage of tuberculous cattle is very low, and still other herds are entirely free from the disease.

Experienced veterinarians and breeders of cattle are of the opinion that tuberculosis in cattle is more prevalent now than it was a few years ago, which is seen in Europe as well, where it is corroborated by accurate statistics.

Many herds are so badly affected that the annual mortality destroys the entire profit from the remaining animals. In New

York State whole herds have been examined by order of the State Board of Health, and large numbers of animals have been slaughtered.

The agitation of the subject has so frightened the public that the consumption of milk has been greatly reduced in some places. It has also seriously affected the value of some breeds of cattle.

For the protection of the farmer's interest, aside from the question of public health, it is important that some definite legislative action should be immediately taken, placing the control of tuberculosis in cattle, and the disposal of tuberculous animals, on a fixed basis, so that there may be uniformity of action in this respect, and so the owners of animals may know what to do, what to expect and how to govern themselves accordingly.

Since it is at present manifestly impossible to make a thorough examination of every bovine animal in the state, it would be well to start the examination with an inspection of the dairies supplying milk to the cities. The direction of the inspection of animals and the control of their diseases should be in the hands of competent veterinary authorities, who should also issue a bulletin of information to cattle breeders, informing them of the dangers to be feared from this disease, and the hygienic and other measures to be adopted to restrict its progress and eradicate it from their herds. The veterinary inspector should have the power, under proper restrictions, to order the destruction of tubercular animals. The question as to whether the owner should receive the whole value, or part of the value, or nothing, is one which has received much attention.

To pay the full value of all tubercular animals would mean, as Dr. Lyman of the Massachusetts State Cattle Commission has pointed out for the state, to go into the business of buying up tuberculous animals from all parts of this great country, for they would immediately be shipped to Pennsylvania almost as rapidly as fat cattle are now shipped to Chicago. On the other hand, if nothing was paid for these tuberculous animals

the owners would suffer an excessive, sometimes a ruinous loss in the interest of the public welfare. We might say that a tuberculous animal is worthless and therefore has no value, but we all know that they are sometimes very productive in the dairy, and frequently make beef of reasonably good appearance. The proper course, and a just one, would seem to be to arrange for the division of the loss between the owner and the commonwealth. A reasonable maximum value for the cattle for the various classes should be decided upon. The condemned cattle appraised within this limit by competent and unprejudiced appraisers. After their destruction the owner should receive a portion, say one-third or one-half of the appraised value.

Before closing my remarks on the subject of tuberculosis, I desire to revert to the value of tuberculine as a diagnostic agent, and that we are no longer justified in depending only upon the methods of physical diagnosis in determining the existence of this disease in herds where we have found cases existing. Surely it would seem that we have just entered upon the real field of learning in regard to one of the probable means of the spread and propagation of tuberculosis.

In a well-timed article recently read by Prof. James Law before the New York Veterinary Association, and published in the last month's magazines, this question has been carefully and thoroughly discussed. We have been rudely awakened to a probable source of danger in this insidious disease. It seems that we have not been sufficiently impressed with the importance and influence of this disease. It may be the final explanation why the disease is so wide-spread and so powerful in its results.

We probably have been looking too long for a direct transmission of the tubercle bacilli from parent to offspring, and straining our eyes looking in the microscope for the existence of bacilli in the udder or in the milk, and have wholly lost sight of the general distribution of the poisonous products which are also present in the animal economy. In other words, we have been trying to discover in the body, in the secretions of

the mammary gland, floating tubercle bacilli, or in the gland some localized tubercular masses, and apparently ignorant of the fact that these same channels, which might bring the original bacilli to this point, were sending, distributing, revolving and attempting to eliminate through every excretory channel the poisonous products that followed the introduction of these germs into the system.

In this connection, also, I would impress upon the members of the association the value of mallein as an agent in the diagnosis of glanders, especially because there is no one disease which comes to us so clouded in obscurity as glanders, and which by physical signs more than severely tests the ability of an expert to decide. The use of mallein seems, as far as known, a perfectly safe test, but a much surer one than the common practice of testing by the inoculation of some other animal with the discharge of a questionable ulcer, or perhaps a single farcy-like bud.

NEW YORK PASTEUR INSTITUTE.*

Statistics of the Preventive Treatment against Hydrophobia for the year 1893. (Fourth Year.)

	A		B		C	
Bites inflicted on the head { simple.....	2	3			1	5
and on the face..... { multiple.....	1				4	
Cauterization { efficacious.....						
non-efficacious.....	1				2	
No Cauterization.....	2				3	
Bites inflicted on the hands { simple.....	3	16	4	8	14	24
multiple.....	13		4		10	
Cauterization { efficacious.....					2	
non-efficacious.....	9		4		13	
No Cauterization.....	7		4		11	
Bites inflicted on the limbs { simple.....		6		2	7	16
and on the body..... { multiple.....	6		1		9	
Cauterization { efficacious.....						
non-efficacious.....	5		1		11	
No Cauterization.....	1		1		5	
Clothes torn.....	2		1		4	
Bites inflicted on bare parts.....	1				3	
Bites inflicted on different parts of the body.....		1		1		3
Cauterization { efficacious.....						
non-efficacious.....	1				2	
No Cauterization.....			1		1	
Clothes torn.....					1	
Btes inflicted on bare parts.....	1		1		3	
Amounts.....		26		11		48
	A		B		C	
General Total.....			85			

(*) The column A refers to persons bitten by animals in which Hydrophobia has been evidenced by experimentation or by the death of some other person or animals bitten by them ; column B to persons who have been wounded by animals having been recognized rabid by the clinical or veterinary examination ; and column C to cases in which Hydrophobia could only be suspected, as the animals had disappeared or were killed instantly and their bodies thrown away.

THESE 85 PERSONS TREATED CAME FROM

- 1 Alabama.

6 Connecticut.

6 Delaware.

1 District of Columbia,

1 Indiana.

1 Kentucky.
- 10 Maryland.

1 Mississippi.

2 Missouri.

15 New Jersey.

11 New York.

4 North Carolina.
- 8 Ohio.

5 Pennsylvania.

5 South Carolina.

5 Texas.

3 Virginia.

No death has been reported among these persons.

COLLEGE COMMENCEMENTS.

CHICAGO VETERINARY COLLEGE.

The eleventh annual commencement exercises of the Chicago Veterinary College were held Thursday, March 22d, at the Grand Opera House. A large audience, friends of the students and faculty, assembled to witness the exercises. Sixty-five young men received their diplomas. The proceeding were opened with an address by President R. J. Withers, who outlined the course of study that had been followed by the successful students, and stated that of the number of graduates the large number of thirty-one passed with honors. After the address by the president, the class arose from the body of the theatre and took positions on the platform, where the president conferred the degree of M.D.C. on each member, and each received his diploma, after which they returned to their seats, and were addressed by the Hon. John G. Shortall, President of the Illinois Humane Society. On Mr. Shortall finishing his address, the prizes were distributed. Wm. Thompson received the prize in anatomy and also the prize in materia medica, he having the highest standing in both of these subjects. P. J. Wilkinson received the prize for highest standing in theory and practice. After the prizes were distributed numerous and beautiful floral tokens, sent by friends of the graduating students, were distributed to the various members of the class. The valedictorian, G. R. Flowers, M.D.C., then read a valedictory address. Dr. Arthur R. Reynolds, City Health Commissioner, then delivered the doctorate address. The proceedings closed with farewell remarks by the president. The following are the members of the graduating class and their present locations:

J. S. Anderson, Seward, Neb.; W. F. Andrews, Meadville, Pa.; M. T. Bernard, Serena, Ill.; J. Biggs, Hubbard, Ia.; G. A. Bond, Vicksburg, Mich.; C. J. Britton, Crawfordsville, Ind.; C. C. Brown, Rockville, Ind.; W. F. Brownlee, Clinton, Ia.; J. J. Bruemleve, St. Louis, Mo.; H. J. Campbell, Paxton, Ill.; P. A. Carlson, Mason City, Neb.; C. A. Clinton, Havelock, Ia.; A.

A. Callasowitz, Cincinnati, O.; P. L. Darcey, Chicago, Ill.; G. L. Dixon, Racine, Wis.; S. H. Ellery, Brimfield, Mass.; G. R. Flowers, Lydonville, N. Y.; D. P. Frame, Colorado Springs, Col.; E. S. Fry, Naperville, Ill.; J. H. Gain, Ada, Minn.; F. T. Gaskin, Plainfield, Ill.; T. J. Heter, Sterling, Kas.; T. H. Hicks, Milbank, S. D.; J. P. Hornig, Rockfield, Wis.; F. P. Hunt, Paxton, Ill.; F. N. Hutchinson, Odell, Ill.; H. Jones, Williamsville, Ill.; J. F. Jones, Wellington, Kas.; H. J. Kannal, Rensselaer, Ind.; R. Kerr, Whitewater, Wis.; D. E. Kinseller, Wyoming, Ill.; R. Kuoni, Sauk City, Wis.; W. F. Lazear, Derby, Ia.; G. W. Loveland, Colebrook, Conn.; W. Matz, Bellevue, O.; A. J. Mauland, Chicago, Ill.; W. E. McBain, Jr., Toledo, O.; B. C. McClintock, Meadville, Pa.; E. A. McCullough, Caledonia, Wis.; J. H. McLain, Inkster, N. D.; D. H. Miller, Norton, Kas.; W. A. Myers, Wenona, Ill.; A. S. Nesbitt, Maroa, Ill.; W. H. Netherland, Louisville, Ky.; C. O. Netherton, Galatin, Mo.; J. W. Otto, Magnolia, Ill.; J. N. Piatt, Boonville, Ind.; C. J. Rhodes, Roscoe, Ill.; A. L. Robinson, Winsted, Conn.; O. Rydell, Minneapolis, Minn.; S. K. Shenck, Salina, Kan.; G. L. Simon, Hometown, Ind.; J. D. Sprague, Owensville, Ind.; C. E. Stewart, Oakley, Ia.; H. J. Stewart, Chicago, Ill.; H. L. Stewart, Oakley, Ia.; J. W. Styles, Peotone, Ill.; Wm. Thompson, Calumet, Ill.; F. P. Tobin, Chicago, Ill.; R. H. Treacy, Steele, N. D.; B. F. Ward, Braidwood, Ill.; C. A. White, Chicago, Ill.; J. W. White, Roberts, Ill.; P. J. Wilkinson, Delafield, Wis.; A. S. Withers, Chicago, Ill.

ONTARIO VETERINARY COLLEGE.

The annual closing exercises of the Ontario Veterinary College were held on the 24th of March, in the lecture room of the college, Prof. Andrew Smith presiding.

GRADUATES.—Andrew L. Alton, Oakville; Walter N. Armstrong, Arthur W. Baker, Cortland, N. Y.; Henry C. Babcock, College Springs, Ia.; Claude Bailey, Rosemont; Alfred Barradell, Kettleby; Levi Porter Beechy, Berlin, O.; Christian F. Behner, Grand View, Ill.; William R. Bell, St. Louis, Mich.; Lincoln L. Bishop, Delavan, N. Y.; Judson Black, Yale, Mich.; John C. Blackwell, Centralia, Wash.; Harry P. Bock, New Ringgold, Pa.; Delbert A. Bonesteel, Frankford, E. Grant

Britton, Guy's Mills, Pa.; Thomas Burns, Croghan, N. Y.; Joseph Butters, Motherwell; Andrew J. Battin, Shunk, Pa.; Samuel A. Bradley, Louisville, Ky.; Archibald B. Campbell, Toronto; Richard Colthurst, Cork, Ireland; Clare V. Connell, Wauseon, O.; James Crail, Tipton, Ind.; John T. Cunningham, Woonsocket, R. I.; Charles F. Curtiss, Parker, S. D.; John F. Cline, Glenboro', Man.; John T. Dade, Hutchinson, Kas.; Clem. M. Detar, Fryburg, Pa.; Richard G. Dingman, Portland, Ore.; Wilber C. Doss, Pittsfield, Ill.; James M. Douglass, Dundee, Scotland; Joseph M. Douglas, Hendrum, Minn.; Jaroslav J. Drasky, Wilber, Neb.; J. W. Dunham, Owatonna, Minn.; I. S. Deitrich, Hamburg, Pa.; Charles F. Ebner, Ipswich, S. D.; Thomas Falconer, Grandin, N. D.; Robert O. Fenton, Kingsley, Ia.; B. Fisher, Creston, Ia.; George Fitchett, Pinnebog, Minn.; John F. Fitzimmons, Danbury, Conn.; Andrew G. Fortune, Vesta; Fred. L. Foust, Defiance, O.; Frank Fowler, Plum Creek, Man.; William R. Fullarton, Dubuque, Ia.; George R. Fetherolf, Mahanoy City, Pa.; Geo. S. Gates, Oneida, Ill.; Otto H. Gebhardt, Alpena, Mich.; E. D. Gleason, Carlinville, Ill.; Joseph M. Good, Greenwood, Miss.; William F. C. Gregg, Barrie; William J. Glasgow, Springfield, Mass.; Francis A. Harsh, Augusta, O.; G. W. Heighway, London; Alfred W. Hinman, Braddock, Pa.; Thomas S. Hitch, Griggsville, Ill.; John Howle, Barnett; William F. Heyde, St. Louis, Mo.; W. R. Hunter, Lewiston, N. Y.; Christian D. Hemmy, Juncan, Wis.; Peter I. Johnson, Marion, N. Y.; George B. Jones, Nevins, Ill.; T. D. Jones, Avoca, Pa.; James S. Joyce, Mansewood; Amandus H. Kistler, Andres, Pa.; Albert J. Kline, Ridgeville Corners, O.; W. L. P. Knoll, Montrose, Pa.; William E. Kreider, Wadsworth, O.; John E. Laidlaw, Glenworth; L. Sherman Lane, Harrisburg, O.; Walter E. Lathrop, Bad Axe, Mich.; D. J. McColl, Lucan; Alexander McConnell, Jarvis; W. W. McCrae, Steubenville, O.; John T. McElroy, Concord; John McGillicuddy, Watford; John G. McGuffin, London; P. L. McCollum, Lewiston, N. Y.; R. J. Marshall, Brandon, Man.; Charles H. Martin, Buffalo, N. D.; Harry M. Martin, Townsenshend, Vt.; W. E. Martin, Perry, Mo.; Robert E. Monteith, Killarney, Man.; Norman Morgan, Strathroy; Henry H. Muecke, Sioux City, Ia.; Robert Mollance, Kirkcudbright, Scotland; Augustus C. Murphy, Sydney, B. C.; Sylvester J. Murray, Medo, Minn.; S. Forest, Musselman, Cynthina, Ky.; Elisha Myer, Ottawa, Ill.; Horace A. Myers, Lodi, O.; Sydney D. Myers, Wooster, O.; W. M. Molyneaux, Forksville, Pa.; John Neville, Decatur, Mich.; Jas. Nicholson, Edinburgh, Scotland; Erasmus M. Nighbert, Palmyra, Ill.; William C. Orr, Dillon, Mon.; John Henry Penfold, Tweedside; James W. Price, Reynoldsburg, O.; William Pullyblank, Keene; Sydney J. Raspberry, Hamilton; William H. Richardson, Watford; Robert Robb, Newman, Ill.; James E. Robertson, West Union, Ia.; Harvey W. Robinson, Guilford, Ind.; Z. L. Rogers, East Palestine, O.; Richard C. Rolles, Maryborough; M. B. Rombough, Morden, Man.; James D. Ross, Port Dover; J. Rowe, Sandusky, O.; William J. Rooks, Holland, Mich.; J. Gill Sallade, New Ringgold, Pa.; Charles A. Sankey, Rossevaine, Man.; Walter A. Seale, Granby, P. Q.; W. J. Shields, Lake Malon; Ernest H. Shuttleworth, Beaconsfield, Ia.; John A. Smith, Ivan; Wade H. Smith, Pleasant Corners, O.; William H. Smith, Morden, Man.; S. Rowe Snively, Lanark, Ill.; O. F. Stearns, Windham, Vt.; James C. Stevens, De Ruyter, N. Y.; E. W. Sunderlin, Auburn, N. Y.; Francis Taggart, Wilsonville; F. Evans Tibbals, Somerset, Ky.; Robert Turnbull, Danville, Ill.; H. A. Turner, Syracuse, N. Y.; Adam R. Van Luven, Cape Vincent, N. Y.; George M. Walrod, Lake View, Ia.; Frederick A. Walsh, Kingston; S. Hay Ward, Chlandebove,

Man.; Le Roy Webber, Rochester, N. Y.; H. F. Whaley, San Francisco, Cal.; Arthur W. Whitehouse, Laramie, Wyo.; E. J. Whitworth, Lynedoch; Robert J. Willis, Brampton; Charles L. Widmeyer, Gretna, Man.; C. Otto Wagoner, Akron, O.; W. H. Wilkinson, Almont, Mich.; John W. Welch, Toronto.

THE SPEECHES.—At the conclusion of the prize distribution, several of the gentlemen on the platform delivered brief addresses to the students. Mayor Kennedy opened the ball with a felicitous speech, in which he congratulated the college and the students upon the conclusion of another successful year in the history of the institution. He commented upon the large number of students present from the United States, British Columbia, the Northwest and many other distant points, and declared that this was a strong testimonial to the wide reputation and thorough work of the college. Many present were leaving college to begin life, but he urged them never to give up study, but to continue to the end of life with the same thorough whole-heartedness that they had conducted their work during their term at the college. (Cheers.)

Principal Caven added his meed of congratulation, and endorsed the mayor's remarks upon the necessity and value of continuous study. This, he declared, was not only a necessity, but the highest joy. The best moral attainments were nearly always found alongside of the best intellectual attainments; a good student was nearly always a good man. He was satisfied the students before them would do all in their power to elevate and advance their chosen profession. (Cheers.)

Public School Inspector J. L. Hughes advised the students to not only keep up with the latest developments in their own profession, but also branch out into other departments. He reiterated and endorsed Henry Irving's advice to the students at Harvard, to nurture and develop their individualism. There was a great personal responsibility attaching to each of them, a responsibility to themselves, their college, their parents, their neighbors, their country and their God.

Mr. J. J. Withrow, President of the Toronto Industrial Exhibition Association, was the next speaker, and he was followed

by Mr. Millar, Deputy Minister of Education; Dr. Thornburn, Mr. Cowan and Mr. Burns.

Before the meeting dispersed a pleasant incident occurred, when Mr. Blackwell of Washington Territory, one of the year's graduates, rose in the body of the hall, and in appropriate and appreciative terms presented Prof. Smith, in the name of the 1894 class, with a large and excellent photograph of the graduates. The group contained about 170 likenesses, and was handsomely mounted and framed.

Prof. Smith acknowledged the gift feelingly, and referred in kindly terms to the good work and high standard of discipline which had characterized the year.

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION, 1893-94.

OFFICERS.—W. Horace Hoskins, President, 3452-54 Ludlow St., Philadelphia, Pa.; A. V. Clement, Vice-president, 902 Cathedral St., Baltimore, Md.; T. J. Turner, Secretary, Columbia, Mo.; Jas. L. Robertson, Treasurer, 409 Ninth Ave., N. Y. City.

COMMITTEES.—*Comitia Minora*.—W. Horace Hoskins, President, 3452 Ludlow St., Philadelphia, Pa.; A. W. Clement, Vice-president, 902 Cathedral St., Baltimore, Md.; T. J. Turner, Secretary, Columbia, Mo.; Jas. L. Robertson, Treasurer, 409 Ninth Ave., N. Y. City, ex-officio; A. Liautard, Chairman, 141 W. 54th St., N. Y. City; W. L. Williams, Bozeman, Mon.; R. S. Huidekoper, 155 W. 56th St., N. Y. City; T. B. Rayner, Chestnut Hill, Philadelphia, Pa.; F. H. Osgood, 50 Village St., Boston, Mass.; J. F. Winchester, Lawrence, Mass.; A. H. Baker, 145 Michigan Ave., Chicago, Ill.

Intelligence and Education.—C. A. Carey, Chairman, Auburn, Ala.; Nelson P. Hinkley, 495 Elliott St., Buffalo, N. Y.; W. B. Niles, Ames, Ia.; Olof. Schwarzkopf, 445 Roberts St., St. Paul, Minn.; J. C. Meyer, Jr., 379-81 Walnut St., Cincinnati, O.

Finance.—Wm. Dougherty, Chairman, 1035 Cathedral St.,

Baltimore, Md.; S. S. Baker, 901 Jackson Boulevard, Chicago, Ill.; R. A. McLean, 14 and 16 Nevins St., Brooklyn, N. Y.

Committee on Diseases.—Leonard Pearson, Chairman, 2200 Pine St., Philadelphia, Pa.; N. S. Mayo, Manhattan, Kas.; S. E. Weber, Lancaster, Pa.; Wyatt Johnson, 244 Mountain St., Montreal, Can.; T. D. Hinebauch, Fargo, N. D.

Prize.—R. L. Huidekoper, Chairman, 155 W. 56th St., N. Y. City; W. Herbert Lowe, 190 Ellerson St., Paterson, N. J.; L. McLean, 14 and 16 Nevins St., Brooklyn, N. Y.

Army Legislation.—F. L. Kilborne, Chairman, Department of Agriculture, Washington, D. C.; Gen. E. Griffin, Fort McIntosh, Laredo, Tex.; Jas. A. Waugh, 49 Race St., Allegheny, Pa.

Publication Committee.—L. H. Howard, Chairman, 1440 Washington St., Boston Mass.; J. B. Rayner, Westchester, Pa.; A. T. Sellers, 312 South 5th St., Camden, N. J.

SPECIAL COMMITTEES.—*Congress of Colleges.*—W. Horace Hoskins, Chairman, 3452-54 Ludlow St., Philadelphia, Pa.; A. W. Clement, 902 Cathedral St., Baltimore, Md.

Act of Incorporation.—C. P. Lyman, Chairman, 50 Village St., Boston, Mass.; Wm. Dougherty, 1035 Cathedral St., Baltimore, Md.; D. J. Dixon, 366 Washington St., Hoboken, N. J.

Revision of Constitution and By-Laws.—W. Horace Hoskins, President, 3452-54 Ludlow St., Philadelphia, Pa.; A. W. Clement, Vice-president, 902 Cathedral St., Baltimore, Md.; T. J. Turner, Secretary, Columbia, Mo.; Jas. L. Robertson, Treasurer, 409 Ninth Ave., N. Y. City.; W. B. E. Miller, Chairman, 527 Penn St., Camden, N. J.; Leonard Pearson, 2200 Pine St., Philadelphia, Pa.; S. Stewart, 7½ St. James St., Kansas City, Kas.

Nomenclature of Swine Plague and Hog Cholera.—A. W. Clement, Chairman, 902 Cathedral St., Baltimore, Md.; Austin Peters, 35 Congress St., Boston, Mass.; Theobald Smith, 1804 Columbia Road, Washington, D. C.

Resident State Secretaries.—R. R. Dinwiddie, Fayetteville, Ark.; R. A. Archibald, Sacramento, Cal.; J. K. Thompson, Pueblo, Col.; J. D. Robinson, 420 Eighth St., N. Washington,

D. C.; Matthew Wilson, Mendota, Ill.; J. O. Greeson, Kokomo, Ind.; F. H. P. Edwards, Iowa City, Ia.; R. H. Harrison, Atchison, Kas.; Jno. M. Parker, 24 Essex St., Haverhill, Mass.; Wm. Jopling, Owosso, Mich.; Jno. S. Meyer, 513 Edmond St., St. Joseph, Mo.; W. L. Williams, Bozeman, Mon.; W. T. Crewe, Devils Lake, N. D.; J. P. Turner, Fort Niobrara, Neb.; F. C. Wilkinson, Claremont, N. H.; E. B. Ackerman, 278 Monroe St., Brooklyn, N. Y.; N. B. Jones, 135 Sycamore St., Cincinnati, O.; H. J. McClellan, Lansdown, Pa.; J. W. Schiebler, 312 Third St., Memphis, Tenn.; Gerald Griffin, Fort McIntosh, Laredo, Tex.; S. B. Nelson, Spokane Falls, Wash.; Leon N. Reefer, 1426 Market St., Wheeling, W. Va.

UNITED STATES VETERINARY MEDICAL ASSOCIATION—MEETING
OF THE COMITIA MINORA.

At the call of the president, the Comitia Minora met in New York on April 3d, with Drs. Hoskins, Robertson, Raynor, Winchester and Liautard present.

Dr. Hoskins made a report in regard to the bill of the stenographer of the annual meeting in Chicago, and, on motion of Dr. Raynor, seconded by Dr. Robertson, it was accepted, with directions to have the bill paid, after approval by the Finance Committee.

Letters which had been addressed to Dr. Liautard, chairman, from Buffalo and Cincinnati, were read, suggesting those places for the next annual meeting of the association. Remarks were then made by the members of a committee appointed by the Pennsylvania State Veterinary Medical Association, asking that the meeting be held in Philadelphia. After hearing the committee, Dr. Robertson moved that an informal ballot be taken.

Drs. Baker, Clement, Turner and Osgood were represented by proxies, Dr. Hoskins casting votes for them. The result of the informal vote gave five for Philadelphia and three to Buffalo. Dr. Hoskins then moved, and it was seconded by Dr. Raynor, that the formal vote be taken. It resulted in giving five votes for Philadelphia, three to Buffalo.

On motion of Dr. Robertson, the President of the Association was authorized to appoint a committee of three, named the Committee on Programme, to regulate the organization of the next September meeting. Dr. Raynor seconded the motion, which was carried.

A telegram received from Dr. F. H. Osgood, announcing the death of Dr. John S. Saunders, of Boston, was read. Dr. Robertson moved that the sympathy of the Comitia Minora now in session, be conveyed to his family by Dr. Winchester, awaiting the formal action of the association. The motion was seconded, carried, and a telegram of sympathy was sent to the family of the doctor.

Motion to adjourn. Carried.

A. LIAUTARD, *Chairman*.

ERIE COUNTY VETERINARY MEDICAL ASSOCIATION.

At a meeting held at the office of Dr. N. P. Hinkley, in Buffalo, Wednesday evening, March 28, 1894, for the purpose of organizing a veterinary medical society for the county of Erie, the following practitioners of veterinary medicine were present:

Drs. J. Wende, Hinkley, Huessler, Ayers, Robinson, S. Somerville, Jr., B. Wende, Thompson, Block, Willyoung, McLeod, Gangloff, Willganz and Wieland.

The meeting was called to order by Dr. L. E. Willyoung, who said:

“GENTLEMEN:—At the annual meeting of the New York State Veterinary Medical Society, held in Syracuse in January, 1894, the subject of organizing county veterinary societies for the different counties throughout the state was discussed at length. While New York and Brooklyn have each a county society, there are no others at present in the state. As officers of the State Society, we took it upon ourselves to organize and establish a permanent Veterinary Medical Society for the county of Erie, with objects as follows:

“1. To hold regular monthly meetings for the purpose of

discussing professional subjects, for mutual improvement, and to improve the status of the veterinary profession by bringing its members into more intimate relationship and consolidating them as a distinctive professional body in the community.

“2. Members to consist of (*a*) Charter Members—all those practicing veterinary medicine who assist in the organization of the above association, and conform to the regulations formulated by a two-third vote of those in attendance at the first meeting of the organization; (*b*) Future Members—to be elected who shall be graduates of veterinary colleges which are legally entitled to grant veterinary diplomas, and which shall be recognized by this association as properly qualified, equipped and conducted for the same.

“Applicants for future membership shall furnish: 1. Proof of graduation from one of such qualified institutions; 2. Vouchers signed by two members of the association testifying to their reputable standing as business men and professional methods; 3. Shall be elected as provided for by the by-laws of this association.

“GENTLEMEN:—We have issued invitations to every veterinary surgeon registered at the Erie County Clerk's office, and would be pleased to have every one become a member of this organization. The practitioners of human medicine have a county medical society, which has been in existence for several years, and they have been fortunate enough to secure legislation which, in a measure, enables them to control the practice of medicine in this county. It protects the members, encourages and benefits all new-comers and prevents imposition. In fact, in order to practice in this county a physician must first join the society. With the progress we are making, the attention and respect we meet with from our legislature, how long will it be before our society shall be vested with the same power?

“Now, gentlemen, I would suggest that we appoint or elect a chairman for this meeting.”

Dr. John Wende was called to the chair, and Dr. Willyoung acted as secretary. It was decided, by a two-thirds vote of

those present that the name of the new association should be "The Erie County Veterinary Medical Society."

It was decided to hold the privilege of joining open to non-graduates till next meeting. The election of officers was then taken up and resulted as follows:

President, John Wende, V.S.; Vice-president, L. Robinson, V.S.; Secretary, C. J. Willgansz, V.M.S.; Treasurer, E. J. McLeod, D.V.S.

On motion of Dr. Willyoung, the following Committee on By-Laws was appointed with instructions to report at the next meeting: Drs. Willyoung, S. Somerville, Jr., and Block, with the president and secretary.

The meeting adjourned to meet again April 11th, at 8 P. M., at Dr. Hinkley's office.

C. J. WILLGANSZ, V.M.D., *Secretary*.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.*

The Pennsylvania State Veterinary Medical Association assembled in the College of Physicians, 13th and Locust Sts., President Hoskins in the chair. The meeting was called to order at 10:30 A. M. At roll-call the following members were present: Drs. Allen, Benner, Bridge, Collins, Conard, Custer, Ferley, Formad, Gladfelter, Glass, Goenter, Harger, Hart, Walter N. Hart, John R. Hoskins, Houldsworth, Keely, Kiel, Kooker, Lusson, McCarthy, McNeil, Pearson, Rayner, Thomas B. Rayner, Jas. B. Ridge, Sallade, Schaufler, Schriber, Webster, Williams, Zuill.

There was also present, Prof. Adam, of the Veterinary Department, University of Pennsylvania; Drs. McAnulty and E. S. Moyer, Dr. B. Lee, State Board of Health; and Drs. Ritter and May as delegates from New Jersey State Veterinary Medical Association; Drs. Dustan and Lockwood, and a number of students from the University of Pennsylvania.

Letters of regret were received from Drs. Lee and Waugh,

* This was not received until April 2d—hence its late insertion.—[EDIT.]

Mr. Beitler, Director of Public Safety of Philadelphia, and Secretary Edge, of the Board of Agriculture.

The minutes of the September meeting were then read by the secretary, and on motion adopted as read.

The president then read his address, which was a brief review of the progress made in association circles, and the work accomplished by this association the past two years. Referring to the trying times in all avocations, he gave words of encouragement to all those who would remain steadfast to the true aims and objects of the profession during the present trying crisis.

The chair announced that nominations for officers were now in order, when the following nominations were made: President, Leonard Pearson; First Vice-president, W. H. Ridge; Second Vice-president, Thos. B. Rayner; Third Vice-president, Drs. Keil and Waugh; Recording Secretary, W. G. Benner; Corresponding Secretary, Drs. Helmer, Ridge, Harger, Allen, Gladfelter, Goentner; Treasurer, John R. Hart; Board of Censors, Drs. Harger, Zuill, Hoskins, Bridge, Kooker, Thomas B. Rayner, McNeil.

There was a motion put that the rules be suspended and secretary cast the ballot for nominees where there was no opposing candidate. There being some objection, the chair ruled that a full ballot be cast. Drs. James B. Rayner and Webster being appointed by the chair as tellers, the election was proceeded with and the tellers then reported the tally of ballot. President, Leonard Pearson, 32 votes; First Vice-president, W. H. Ridge, 22 votes; Second Vice-president, Thomas B. Rayner, 22 votes; Third Vice-president, James A. Waugh 16 votes and Z. S. Keil, 5 votes; Recording Secretary, W. G. Benner, 21 votes; Corresponding Secretary, W. H. Ridge, 2 votes, F. S. Allen, 12 votes, R. Gladfelter, 2 votes, C. Goentner, 7 votes; Treasurer, J. R. Hart, 20 votes; Board of Censors, S. J. J. Harger, 21 votes, W. L. Zuill, 15 votes, F. Bridge, 10 votes, W. S. Kooker, 16 votes, J. C. McNeil, 19 votes, W. H. Hoskins, 18 votes, Thomas B. Rayner, 14 votes, James B. Rayner, 2 votes.

The tellers were requested to recount the votes as they had counted two ballots cast for James B. Rayner to account of Thos. B. Rayner, the above being the corrected count of tellers.

The president then thereupon announced the elected officers for the ensuing year: President, Leonard Pearson; First Vice-president, W. H. Ridge; Second Vice-president, Thomas B. Rayner; Third Vice-president, James A. Waugh; Recording Secretary, W. G. Benner; Corresponding Secretary, F. S. Allen; Treasurer, John R. Hart; Board of Censors, S. J. J. Harger, Chairman; J. C. McNeil, W. Horace Hoskins, W. S. Kooker and W. L. Zuill.

Corresponding Secretary Ridge then read the following applications for membership: Dr. W. A. Shields, V.M.D., Dr. Charles Ernest, V.M.D., Prof. John W. Adams, V.M.D., Dr. E. S. Moyer, and Dr. James McAnulty; also those which had been laid over of Drs. Tomlinson, Cayley and Fox.

A recess of fifteen minutes was then taken that the Board of Trustees might examine into the aforesaid applications.

The board being prepared to report, the gavel from the chair restored order, and the report of trustees was given by Prof. Harger, offering a favorable recommendation of Drs. Shield, Adams, Ernest, Moyer and McAnulty. Unfavorably recommended, Drs. Tomlinson, Fox and Cawley.

The report of Board of Trustees was favorably received.

The chair then directed that each applicant favorably reported by the board should be balloted for. A motion prevailed, however, that applicants should be elected singly by acclamation. The election of applicants was so conducted, and Drs. W. A. Shields, Charles M. Ernest, John W. Adams, James McAnulty and E. S. Moyer were elected to membership. The president then introduced those of the elected members which were present.

At 1 o'clock a motion was then entertained to adjourn for luncheon at "Boothby's Restaurant," the same being extended by the Philadelphia members to all present, who heartily enjoyed the same.

The afternoon session was called to order at 2:15 P. M.

The chair announced that the delegates of the New Jersey Veterinary Medical Association, Drs. Dustan and Lockwood, were present, and a cordial welcome, with privilege of the floor, was extended to them. The chair further stated that 2 P. M. was the time appointed to open the discussion and consider the advisability of continuing the attempted legislation relative to milk and meat inspection, and that the letters of regret from Secretary Edge and Director Beitler were a disappointment to himself and all the members, as much information upon this subject was expected from them. He requested that Prof. Pearson open the subject, which he did, and after stating in what form the bill had been presented to the legislature thought that it might in some way be improved upon, when we could hope for better success in the future. He laid considerable stress upon the importance of eradicating tuberculosis, and made more valuable suggestions, which were edifying to all present.

Dr. Benj. Lee, from the State Board of Health, was the next speaker on the subject, and gave also many valuable suggestions. He thought the standard of solids might be somewhat reduced, which would strengthen the bill of meat inspection, as the reduction from 12 per cent. to 11 per cent. would make little difference to the health of the general public, and would give the bill a better chance to pass in this respect. He referred to an act which was passed by the Massachusetts legislature, when in May and June the standard of milk was lower there those months owing to the fact that animals grazed upon early vegetation when it contained much juice, and in consequence would not yield such rich milk as when they were much matured. He spoke earnestly of the importance of eradicating tuberculosis in domesticated animals, the products of which were used for human food, and said that the State of Massachusetts had gone at it in earnest; that ten thousand dollars (\$10,000) were appropriated in that state for laboratory work alone, and their entire appropriation amounted to forty thou-

sand dollars (\$40,000), while the appropriation in this state amounted to four thousand dollars (\$4,000) but notwithstanding the township Board of Health had multiplied rapidly, and they hoped in the near future to establish a local board in each township.

Prof. Harger thought the bill, as had been presented, too complicated; better one a milk bill and the other a meat bill, but what is of first importance is stock inspection.

Dr. Schrieber thought that any bill which would provide for the extermination of tuberculosis would be futile unless it was so framed as to necessitate the inspection of cattle from other states, thereby preventing the emigration of the disease.

Dr. Sallade thought the general public should be better educated in tuberculosis and other contagious and infectious diseases, then there would be no trouble in getting laws passed to stamp out such diseases. That the Bovine Association, of which he is president, was formed for this purpose largely.

Dr. Zuill thought that bills as presented are trying to the farmer and dairy-man, as they had all to lose, even his time and annoyance.

Prof. Harger then offered the following resolutions:

Whereas, The sanitary inspection of the various food stuffs consumed by man has reached such dimensions as to become a subject for public discussion, and knowing that their contamination with impurities is a menace to the public health,

Whereas, We have undisputed evidence that certain diseases affecting dairy animals are transmissible to man through emanations from these animals and their surroundings, and especially through the milk as has been established in the case of tuberculosis of cattle and other diseases, and which are the source of wide-spread and fatal diseases among mankind,

Be it Resolved, That it is the sense of the association that dairies and their surroundings, the milk of which is offered for sale in this commonwealth, be thoroughly inspected, and that its members display every effort in securing proper legislation to procure a pure and wholesome milk supply.

Dr. Schaufler asked that this resolution be referred to a committee of three, but as it was presented as a general resolution it was on motion adopted as the sense of the association, and that it be spread upon the minutes.

Report of committee now in order, Dr. Kooker, Chairman of Committee on Legislation. reported as follows:

To the President and Members of the Pennsylvania State Veterinary Medical Association:

We beg to state that since the semi-annual meeting we have had no complaints of violation of the veterinary registry laws. The Keystone Association of this city appointed a committee to visit the Prothonotary's office and have the Veterinary Registry revised according to law, viz., have removals and deaths so recorded on the registry. We would advise the appointment, by the president of this association, of a member in each county to examine the registry and have it amended by noting the removals from the county, and also those who may be deceased. We would like to have the sense of this meeting on the passage of a law requiring all those having diplomas and contemplating practicing veterinary medicine and surgery in this state, be required to present the same before an examining board, which shall entitle them to be examined by said board, and if the examination prove satisfactory, then said board will issue a certificate to that effect, which will entitle them to be registered. We would like this subject to be discussed before this meeting that the Legislative Committee may know the wishes of this association in the matter of the bill as well as the passage of such a bill. In the event of this association agreeing with this committee, then the Legislative Committee will have a bill drawn up according to their wishes and ready for presentation at the semi-annual meeting in September.

We would also bring before the association the matter of the meat and milk supply, and urge the profession to assist in every legitimate manner the Board of Health in its passage of such a bill. It is the opinion of this committee that the

State Board of Agriculture that controls the contagious diseases of our live-stock should be under the charge and control of veterinarians, and would like the sense of this association on the subject.

W. S. KOOKER, *Chairman.*

T. B. RAYNER.

JAS. W. SALLADE.

FRANCIS BRIDGE.

The report of the committee was received and ordered to be spread upon the minutes, when on motion a committee of three was appointed by the chair to draw suitable resolutions in regard to establishing a state board of veterinary examiners. This committee consisted of Drs. Zuill, Pearson and Kooker, who subsequently offered the following resolution, which was adopted:

Whereas, It is the sense of this association that the registration bill fails to accomplish the purpose for which it was intended, that is, confining the practice of veterinary medicine to qualified practitioners, be it

Resolved, That the Legislative Committee of the Pennsylvania State Veterinary Medical Association of Pennsylvania be instructed to draft a bill, the object of which shall be better regulation and practice of veterinary medicine, to provide a Board of Veterinary Examiners to examine all persons desiring to practice veterinary medicine in this state on the various subjects of their profession. The board to be appointed as thereafter provided, and to be known as the State Veterinary Examiner's Board.

W. S. KOOKER.

W. L. ZUILL.

It was further recommended that there be one member in each county which was represented in this association appointed to look after the county registry of veterinarians.

It was moved and seconded that this association send its Committee on Legislation to formulate a bill in connection with

the meat and milk supply, and report the same at the September meeting.

The following resolution was then offered by Dr. Williams, and on motion accepted and ordered to be spread upon the minutes.

Whereas, The veterinary profession has reached a stage in its development that may properly be designated and independent, and is protected as an independent profession by the laws of the State of Pennsylvania, and

Whereas, We feel that it is within the power of the veterinarians of Pennsylvania to be of great public service to the owners and consumers of live-stock and their products, be it

Resolved, That the matter of the control, eradication and investigation of contagious and other diseases among animals in this commonwealth should be directed and carried out by veterinarians who, indeed, are the only ones capable of serving the best interests of the public in the above-named capacity.

CHAS. F. WILLIAMS.

The next report was that of the Committee on Sanitary Science and Police by Dr. Formad. This notes no new disease, speaks of some length of the diseases of tuberculosis which was still existing, and of the value of tuberculine as a diagnostic agent in this disease, and of mallein in glanders, etc.

State Veterinarian, Dr. Bridge, also a member of said committee, was asked to address the members upon the subject, which he did. He said that in the last year 39 herds of cattle were reported in the state which suffered from tuberculosis, numbering altogether 450 head, 91 of which were diseased. Fifty-eight head were destroyed, which fully exemplified the disease, and in 5 head no visible traces of the disease appeared. The entire number had been tested with tuberculin, and of the 91 which showed some reaction all were destroyed. That 150 cases of glanders were reported; of this number 61 were found diseased, but that altogether 68 head had been destroyed. These, also, were tested with mallein.

He further reported the outbreak in two herds of "anthrax," of which 6 animals died.

The committee's report was accepted, and a vote of thanks was extended to the committee for the same.

There was no report from the Committee on Intelligence and Education, owing to the fact that a letter from the chairman, Dr. Weber, stated that on account of illness he was unable to be present, and was unable to draft a report. This matter had been referred by him to Dr. Helmer, who also was unable to be present at the meeting.

The report of Corresponding Secretary Ridge was then read, and on motion received and ordered to be spread upon the minutes.

Next in order the treasurer's report was read, which showed a balance in treasury, March 6, 1894, of \$42.53.

PHILADELPHIA, March 7, 1894.

The second day's session of the Pennsylvania State Veterinary Medical Association was called to order by President Hoskins at 10:30 A. M. The following members were present: Drs. Allen, Benner, Collins, Ferley, Foelker, J. C. Formad, Gladfelter, Harger, John R. Hart, Walter L. Hart, Hoskins, Houldsworth, Keeley, Kiel, Knight, Kooker, Lusson, W. B. E. Miller, McCarthy, Pearson, Phillips, Thomas B. Rayner, Sallade, Schaufler, Sturge, Tagg, Timberman, Webster, Williams, Zuill, Marsack, Adams, Felton, Nicholson, McAnulty, Rhoads.

As delegates from New Jersey Veterinary Medical Association, Drs. Duston and Lockwood. As visitors from New Jersey, Drs. Runge and Bailey. From Delaware, Dr. Eves; from Maryland, Dr. Martenet. Also S. G. Hendren, E. L. Killner, A. Lallinger, R. M. Black, U. G. Houck, F. A. M. Bertram, Thos. Castnor, E. H. Moore, G. W. Dilher, S. K. Green, F. T. Shannon, F. H. Andrews, E. Mount, E. E. Terry, E. Knight, C. J. Marshall, J. M. Carter, R. J. S. Wicksel, C. E. Fouse, J. J. Rechenwald, E. Hogg, B. M. Underhill, C. W. Boyd, L. Brackbill, George E. Harder, R. D. Heaton and G. F. Hartler.

A letter was read from Dr. J. A. Waugh, in which he regrets his absence, and in which he calls attention of the association to an advertisement published in the *Spirit of the Times* (sporting paper), dated December 3, 1893, of the Ontario Veterinary College, advertising for students for a term of three months. This letter was referred to the Board of Trustees.

The chair said, whereas, the Wisconsin State Veterinary Medical Association of graduates were this day in session also considering kindred subjects to ours, that this association should extend their congratulations, whereupon a motion to that effect prevailed, and Drs. Ridge, Kooker and Timberman were appointed to compile a message of congratulations and forward the same to the Wisconsin Association, which was answered by the Wisconsin Association in very warm terms.

Delegates appointed to various state associations were then asked to report.

Dr. J. C. Foelker reported as delegate to the International Congress held at Chicago. Dr. Kooker, delegate to the New Jersey Veterinary Medical Association, reported that he was unable to attend. A similar report came from Dr. Timberman, who was a delegate to the New York State Veterinary Association. Dr. Lusson reported that he could not get the time and place of meeting to which he was appointed.

An application for membership of Dr. C. S. McKenna was read by the secretary, and the same was referred to the Board of Trustees.

An Auditing Committee was appointed by the chair to audit bills, vouchers, etc. Drs. Benner, Lussen and Knight.

At this time a short recess was taken that the Board of Trustees and Auditing Committee might complete their work.

The Board of Trustees being prepared to report, Dr. C. S. McKenna was favorably recommended, whereupon he was elected to membership.

The board also presented the following in reference to Dr. Waugh's letter:

To the Pennsylvania State Veterinary Medical Association:—

We beg leave to report that we have had presented to us for consideration a letter from Dr. James A. Waugh, calling our attention to an advertisement in the *Spirit of the Times*, a sporting paper, dated December 3, 1893, by the Ontario Veterinary College, advertising for students for a term of three months, and that we deprecate the action of the Ontario Veterinary College, and recommend that this association censure the faculty of the said college for abbreviating the course of veterinary education.

The recommendations of the board were received. The Auditing Committee report, the treasurer's report and bills correct.

Dr. Zuill's paper being called for was read, entitled "Surgical Treatment of Lesions of the Hock," after which the chair stated that if there were no objections he would ask for the reading of the paper by Dr. E. Sturge on "Penetrant Cauterization in Treatment of Lameness for Ostitis," as both papers covered much of the same ground, and the discussion would then take place on both papers. There being no objections, Dr. Sturge read his paper. The discussion following proved very interesting, critical and conflicting, and was participated in by Drs. John W. Adams, W. B. E. Miller, Harger, Pearson, Eves of Delaware; Martenet of Maryland; Sallade, Hoskins, Foelker and Allen.

At 1:15 P. M. adjourned for lunch.

The meeting reconvened at 2:30 P. M. The Board of Censors favorably recommended for membership Dr. C. S. McKenna, and on motion his election followed.

The chair then called attention to the fact that the Comitia Minora of the United States Veterinary Medical Association would shortly meet to determine upon a place of meeting for 1894. He had been importuned by many that this state and Philadelphia should be favored with this meeting, and it was open for further consideration by the members. Many of the

members strongly urged that the association take active steps to have the meeting for Philadelphia, and it was afterward moved and seconded and carried that the chair appoint a committee of three to draw up a suitable appeal, and to use their influence in winning the meeting for Philadelphia. The chair stated he would leave these appointments for his successor in office.

Dr. Miller then followed with his paper on "Castration," which, after reviewing the various methods, treated at length all the features connected with the performance of the operation with the animal standing. He also explained the method adopted by Farmer Miles in operating upon cryptorchids, and answered fully many public criticisms made of his results in so operating. The paper was discussed by Drs. Pearson, Harger, Zuill, Breisacher, and a motion offered by Dr. Pearson that a vote of thanks should be tendered Dr. Rogers for stimulating Dr. Miller to prepare the paper just read, and was carried.

Dr. S. J. J. Harger then gave a very interesting paper on "Atmospheric Air in the Veins," recording a list of carefully performed experiments with the results obtained.

This paper was discussed by Drs. Adams, Zuill and Breisacher.

The subject of "Transfusion of Blood," by Dr. W. G. Benner, was postponed until the September meeting.

Dr. E. Mayhew Michenew was absent, and no letter having been received by the secretary, there was no explanation of the absence of his paper.

Under Reports of the Cases, Dr. Jas. T. McAnulty reported an interesting case of fracture of the os-pedis.

The place for holding the semi-annual meeting was then considered, Harrisburg and Pittsburgh being named. A vote being taken, Harrisburg was chosen.

The retiring president then introduced the president-elect, Dr. Leonard Pearson. The latter, on taking the chair, very warmly thanked the members for the high honor they had just conferred.

The other officers-elect were severally introduced, and each accepted the new duties allotted them, after which a motion to adjourn prevailed.

ROBERT GLADFELTER, *Recording Secretary.*

MINUTES OF THE SIXTH ANNUAL MEETING OF THE IOWA STATE
VETERINARY MEDICAL ASSOCIATION.

SAVERY HOUSE, DES MOINES, IA.,

December 12, 1893.

3.30 P.M.—The meeting was called to order and Dr. T. A. Bowa, of Chariton, made president *pro-tem.* in the absence of the president and vice-president. Dr. Jno. E. Brown, of Oskaloosa was made secretary-treasurer *pro-tem.* in absence of Dr. Stewart.

Roll call found members present as follows: Drs. E. E. Sawyers, M. Stalker, G. F. Starkey, S. H. Bauman, G. J. Howell, A. B. Morse, W. B. Niles, W. H. Austin, T. A. Bown, J. E. Brown, J. O. Sincoke, C. A. Ashworth. Guests: Drs. E. G. Wheeler, A. H. McKeller, and E. H. Kingery.

The minutes of the preceding meeting were read and approved.

Letters were read from the following absent members, expressing "regrets" and best wishes for a successful meeting: President, F. H. P. Edwards; Secretaries-treasurers, S. Stewart, G. A. Johnson, M. E. Johnson, J. I. Gibson.

The treasurers report was next called for and read, the president appointed Drs. Sayers, Starkey and Austin to audit the accounts. The committee found the accounts correct and the report was accepted.

Dr. W. H. Austin was appointed to fill vacancy on board of censors.

The board of censors reported favorably on all applications for membership submitted.

Moved by Dr. Starkey that the secretary cast the ballot of the association in favor of each applicant was duly seconded and carried.

Secretary: Following the instructions, I cast the ballot for this association, which elects to membership the following named gentlemen: Drs. A. H. McKeller, Des Moines; S. H. Kingery, Custon; E. G. Wheeler, Pella; G. R. Rich, Fayette, and W. B. Lincoln, Orange City.

The secretary's report was called for and read as follows :

MR. PRESIDENT AND FELLOW MEMBERS:—It is with much pleasure that I acknowledge the generous co-operation and courtesy extended to me in the discharge of the duties of secretary for the past year, and I trust the effort put forth will prove helpful in the interests of our association, and will be fruitful in a successful meeting at this time. The list of papers promised and published in the programmes which were sent to all our members, guarantees an abundant supply of material for discussion. All who attend will no doubt feel grateful that it is their privilege to have a share in this most interesting and profitable gathering of our profession in Iowa.

It is with regret that I call attention to the fact that several of our active members, men who always delighted to attend, and who contributed with their pens and in discussion, to make past meetings interesting, have been called to fields of usefulness so far beyond the borders of Iowa that it is probable they will not often find it convenient to attend the meetings of this association. The mails are at their command and they ought to remain contributing members. In their present locations they will find it convenient to identify themselves with local associations, and will feel in duty bound to give such local societies financial support, and in consequence may be inclined to withdraw from our association if they are taxed to maintain its expenses. The thought suggests itself, would it not be well to elect those who desire to maintain some relation to this association, to honorary membership, or by resolution remit the dues of such non-resident members, and retain their names on our roster.

Should this association see fit to so change its constitution that persons who matriculate after the year 1895, and become graduates from veterinary colleges which do not require a reasonable entrance examination and a three years course of study should not be eligible to membership, the association would greatly aid in the good work for higher veterinary education started by the United States Veterinary Medical Association, and so heartily seconded by the Pennsylvania State Association. I feel sure the veterinarians of Iowa are in sympathy with this effort to elevate our profession, and would we not be derelict if we did not take an active part in this important movement. I am in favor of making such a change in our constitution.

There are several members on our list who do not reply to communications from your secretary, and are delinquent three or more years for dues. The secretary should be directed to suspend from the list such members if another and final notice did not bring a proper response.

Very respectfully submitted,

S. STEWART, *Secretary*.

Dr. Starkey: I move the report of the secretary be adopted.

Dr. Stalker: In seconding this motion, I want to call the

attention of this association to the fact that there are sections which should receive special attention and discussion. Carried.

It was then decided to read and act upon the report by section.

Dr. Stalker: I move that the section refering to honorary membership be refered to the board of censors, and that they report at a later session of this meeting. This motion was seconded by Dr. Kingery and carried.

Dr. Stalker: In regard to the requirements for membership, I never realized before how large a loop-hole there is. Section 1, Article III of our by-laws says: "Applicants for membership must be graduates of legally authorized veterinary colleges." Colleges might, so far as our rules are concerned, grant diplomas to men who are not able to write their names, but who then would be eligible to membership.

Our danger, to-day, is not from the *quack*, but from graduates from inferior colleges. I am in favor of good wholesome legislation, not only from quackery, but from the graduates from inferior colleges. I think we should use our influence to elevate the profession to a higher standing, and this may be through higher education. This body might do its part by making a higher requirement from applicants for membership. It probably would be well to coincide with the U. S. V. M. A.

Dr. Kingery: I endorse Dr. Stalker's remarks. The veterinary profession through the country is represented largely by empirics who are entirely unqualified. Not only the empirics, but many so-called graduates spend most of their time in the saloons and billiard halls. Many of the veterinarians of Iowa have been practicing in the state for a number of years, and are graduates of a two year course. At that time it was the best they could do, now there are better facilities for obtaining a veterinary education and intending students should avail themselves of the opportunity.

Dr. Starkey: I am heartily in favor of what has been said. When I finished a three year course I felt I was none to well qualified to practice veterinary surgery. I think the matter of

character should also be taken into consideration; would favor a change of by-laws.

Dr. Bauman: I am heartily in favor of anything that will tend to elevate the profession.

Dr. Brown: This is a question of great importance. Most all of us are graduates from a two-year course, the best we could do at that time, for the best colleges we had only gave its students a two-year course. Now there are colleges that any one can get into and get through and come out with a diploma if they can put up the necessary money. The matriculation examination should be more strict.

Moved by Dr. Starkey and seconded by Dr. Austin, that the chair appoint a committee of six, with Dr. Stalker chairman, to prepare an amendment to Section 1 of Article III of our by-laws. Carried. The chair appointed Drs. Stalker, Brown, Howell, Kingery, Austin and Bauman on this committee.

In regard to that section of the secretary's report concerning the suspension of delinquent members, the secretary was instructed to write a personal letter to each delinquent member, endeavoring to collect all arrearages that the memberships might be retained.

Meeting adjourned for supper. Evening session 8.30 P.M.

Dr. Brown being somewhat indisposed, asked to be relieved of the responsibility of presiding, and Dr. Stalker was placed in the chair.

Dr. F. H. P. Edwards, president, finding it impossible to attend the meeting, had forwarded his address, which was read by the acting secretary and placed on file.

GENTLEMEN: On occasions like this it has been the custom of the presiding officer to present an address; it has also been the custom for the address to occupy much more time than was necessary, and cover ground that was intrusted to committees. Hence it has been the experience in the last four meetings of this association, that there has not been enough time left to do justice to the other items on the programme.

With this in view I intend to only utter a very few remarks; and I trust the example may be copied by the presiding officers in the future.

"What have we done to advance our profession and benefit our association in the year that is about to pass away?" is a question we must now ask ourselves. Some have fairly and honestly done their part; whilst others, I fear, it is too true, have

tried how little they could do, without actually doing anything ; yet we are all fretting because we don't get recognition and secure legislation. Have we each brought the name of an applicant that we wish to become a member of this association ; if not, let us each return home from this meeting with the determination that it shall not occur again ; and that at the next meeting we will bring at least one name, if not, more, to present to the meeting ; in this way we benefit our association and reflexly ourselves.

Another way, and to my mind, a very good way to get recognition, is to keep ourselves before the public a little more by writing to our local papers, correcting false ideas that appear from time to time in them concerning certain diseases of domestic animals, written not only by laymen but by medical doctors.

Before we can expect to be recognized we have a duty to perform to the general public. It is our duty to *lead*, not to follow ; not merely to be alongside of public opinion, but to lead it in such matters as professional training and general practice afford us facilities for forming advanced opinions.

The most threatening evil that I see to hinder us from advancing, not only in the minds of the public, but our own, is the alarming increase of two term schools. It is no uncommon occurrence for one of these schools only having been in existence a few months to graduate from one to a dozen students ; this gentlemen, is positively alarming, and it is our bounded duty to do, legitimately, all in our power to influence intending students to stay away from these Diploma Mills, where the matriculation examination consists of paying sixty to one hundred dollars. Others again, as a matter of form, have a matriculation examination where the questions set to students on entering, to test their general education, seem to be just about such as would indicate whether a man possessed sufficient knowledge and intelligence to understand and learn the science necessary to make a veterinary surgeon.

From what I have seen of successful candidates, it is certain a very low standard of proficiency is accepted by the examiners. I should fancy ten per cent. of marks must pass a man. And if I am right, this is unfair to the profession at which they aim.

I am calling your attention to what is one of our practical responsibilities.

We, as members of the profession are virtually interested in the quality of man we admit to our ranks.

With us, it ought to lay whether he will be a credit or discredit to us ; is he the kind of man who will add to our general knowledge, do justice to his client and honor the diploma by which we recognize him, and by which we recommend him to the public. How to remedy this great evil is hard to answer ; however, it is our duty from now on to think of it and bring it before the public in a legitimate way, so that intending veterinary students may be kept from entering such institutions.

But let us turn for a few moments and take a brighter view of our profession and see how we stand. Scientific men twenty years ago in this country were unknown. To-day in our schools and in practice, there are plenty of men, capable of themselves, undertaking an original piece of scientific research, and carrying it through, as no man could in the previous history of our profession, and as to practice, we have better practitioners than we ever had before, Rational treatment is now the prevailing rule, and we understand that if nature is given a chance there are better prospects for an animal's recovery.

As to social position may we not claim some advance? As the school board continues to do its work and cultivate the intelligence of this country. I hope the time will come when the social status of a man will not be judged by the state of his balance at the bank, but by the balance in his head.

Let us endeavor to keep up this progress that we have been making and with "onward" as our watchword, let us never stop until we secure the place that our profession justly entitles us to.

In conclusion, gentlemen, allow me to thank you most heartily for the honor conferred upon me; also for the assistance and courtesy shown me during my term of office as president of this association.

The committee on legislation reported progress through Dr. Stalker, who explained to the meeting some of the obstacles met with by the committee when they attempted to introduce their bill into the legislative bodies.

It was moved by Dr. Starkey and seconded by Dr. Bauman to continue the committee and that they be instructed to use their best judgment and efforts to effect suitable legislation. Carried.

Committee on Collective Statistics reported through the chairman Dr. G. F. Starkey, of Boon, Ia.

REPORT OF COMMITTEE ON COLLECTIVE STATISTICS.—During the year 63 cases were reported. This number was divided as follows: Specific ophthalmia, 9; cribbers, 4; ringbones, 10; bone spavin, 20; kicking, balking, etc., 20.

The ophthalmia cases were classified as follows: Age, 1 to 9 years. Sex: mares, 2; geldings, 7. Color: bays, 3; greys, 4; sorrel, 1; dun, 1.

Breed; Grade Percheron and Morgan, 1; Norman, 4; Clyde, 1; trotting and roadster, 3.

Age developed: 2d year, 2; 3d year, 2; 7th year, 3; 6th year, 1; 8th year, 1.

Sires in 7 cases are known to be sound; in 1 unsound and 1 unknown.

Dams in 7 cases known to be sound; in 2 unknown.

Grand-sires in 2 cases known to be sound; 1 unsound and 6 unknown.

Grand-dams in 2 cases known to be sound, 1 unsound and 6 unknown. The two mares produced foals subject to the same disease.

Cribbers: Four were recorded as follows: All light roadsters. Age, 4 to 15 years. Sex: mares, 2; entire, 1; gelding, 1.

Color: Sorrel, 1; roan, 1; bay, 1; brown, 1.

Breed: Unknown, 2; thoroughbred, 1; Morgan, 1.

Age developed: 5th year, 1 (while owner was buying cattle and left the horse standing for hours at gates and fences, when he became uneasy and acquired the habit); 6th year, 1; while suffering from a punctured wound in foot. Two unknown.

Sires: 1 cribbed; 1 did not; 2 unknown.

Dams: 2 unknown, 1 unaddicted, 1 produced foals, part of which cribbed before they were 1 year old.

Cases of ringbone, 10.

Sex: Mares, 5; geldings, 4; stallions, 1.

Color: Greys, 5; bays, 5.

Breed: Percheron, 5; Belgian, 2; Clydes, 2; pony, 1.

Age developed: 1st year, 1 (soon after foaling); 3d year, 2; 2d year, 4th year, 6th year, 7th year, 8th year, 10th year and 13th year; each 1.

Sires: 5 unknown, 4 sound, 1 affected.

Dams: 1 effected, 4 unknown, 5 sound.

Grand sires: 1 affected, 9 unknown.

The stallion produced one defective foal, one dam produced one defective foal, and another dam produced five foals, all of which had ringbones on each hind foot.

Bone spavin (20) cases: 13 heavy and 7 light horses.

Sex: Males, 10; females, 10.

Color: Bays, 14; greys, 4; sorrels, 2.

Breed: 5 unknown, French-Canadian, 1; Morgans, 3; Clyde, 2; Percherons, 3; Cleveland bay, 1; trotting, 5.

Age developed: 5th year, 6; 3d year and 9th year, each 1; 2d year, 6th year, 7th year, 8th year, and 11th year, each 2; unknown, 1.

Sires: 10 sound; 10 unknown.

Dams: 10 unknown, 8 sound, 2 unsound.

Grand sires: 3 sound, 17 unknown.

Grand sires: 1 unsound, 14 unknown, 5 sound.

In 3 cases other offsprings were known to be affected. Some of the spavins were traceable to direct injury.

The 20 cases of kicking, balking, etc., were well distributed among all the popular breeds, and were of various ages, colors and temperament (mostly nervous) and came by their faults mostly through an unbroken line of like ancestry.

The committee complained of having received very little encouragement from the members in the way of filling and returning the blank sent out. Comparatively few reports were received, but it was decided to continue the office through another year and make an extra effort to collect more notes. Quite a discussion followed on the subject of "Specific Ophthalmia."

Dr. Brown has seen many cases, but has been unable to satisfactorily trace the ancestors. He thinks it due to heredity—that it may be carried through several generations without making its appearance and then develop. Following a motion by Dr. Bauman, the report of the committee was received.

Dr. G. A. Johnson, of Sioux City offered the following resolution.

Whereas, the Hon. J. Sterling Morton, secretary of agriculture has recommended that the appointment of veterinarians in the Bureau of Animal Industry be made on the merit system under the control of the civil-service commission. *Therefore, be it resolved*: That we the members of the I. S. V. M. A. do heartily commend the Hon. Secretary of Agriculture for this important recognition of the veterinary profession.

Be it resolved: That a copy of the resolution be recorded in the proceedings of this meeting, and a copy forwarded to the Hon. Secretary of Agriculture, and each of Iowa's representatives in Congress.

This was adopted and the secretary instructed to follow out the meaning thereof.

Dr. L. A. Thomas, of Atlantic, Iowa, being unable to attend the meeting, had forwarded his paper on "Modern Advances in Scientific Surgery,"* which was read by the acting secretary.

Dr. Bauman: I should like to ask what sort of adhesive plaster can be made to hold—have tried various kinds but to no good effect.

Dr. Kingery: I have used kangaroo tendon sutures to great advantage, also metallic hooks.

Dr. Brown reported a case of ventral hernia (very large, 2½ to 3 inches, opening in abdominal walls). Used cat-gut suture to secure the edges of the walls, for all but one stitch; running short of the gut suture, silk was substituted for this one stitch; wound healed nicely, except a fistula formed where this one silk suture was used. Adjourned for the night.

SECOND DAY—November 13.

MORNING SESSION, 9 A.M.

After the meeting was called to order, Dr. Starkey, of Boon, Iowa, read a paper on "Actinomycosis."†

Dr. Kingery: I should like to ask the essayist if he consid-

* The papers will be published in later issues.

† See following issue.

ers the germ an invading one, or are the spores too large to be carried in the circulation.

Dr. Starkey: I believe the spores cannot live in the circulation, it is generally only the superficial structures affected.

Dr. Kingery does not consider the meat of animals affected fit for human consumption. Saw one case in which an enlargement had been dissected away from the throat, and seemingly made a complete recovery—was sold, butchered, and condemned by the meat inspector. The lungs, liver, and other organs were found diseased, and microscopic examination realized actinomycosis.

Dr. Stalker: I would ask Dr. Starkey if he has had much experience with the potas. iodide treatment, where the tongue was indurated, swollen and hanging out of the mouth.

Dr. Starkey: Yes; for example, one case in which the tissues were thus affected and fetid, mouth full of grass, unable to get it up or down, tongue inflamed and swollen, was fed on slop and ground food; received about three ounces of iodide of potassium, and made a good recovery—other cases similar.

Dr. Brown has had good success in treating these cases, where the bone is not diseased. Uses the knife freely, then cauterizes the wound with hot iron and gives the iodide of potassium. Where the osseous structures are involved, treatment has been of little use. Sometimes succeeded in stopping the sloughing, but the enlargement remains. Thinks the true source of infection has not yet been discovered.

Dr. Bauman: For a number of years Dubuque was the dumping ground for the diseased cattle in transit to Chicago, and lumpy jaw cattle in a great measure was the meat supply to the city until the meat inspector got onto the game of the shippers and butchers, but no evil effects apparently came from the consumption of such food.

Dr. Stalker: What has location to do with the disease?

Dr. Starkey: Cattle in sections of short pasturage, where the cattle reach through barb-wire fences to graze, are more apt to be affected and the disease is more superficial.

Dr. Bauman, of Dubuque, read a paper on "Punctured Wounds."*

Dr. Nile: Was there any stricture remaining in the œsophagus you speak of in your paper?

Dr. Bauman: No; there was no trouble of that kind.

Dr. Bown reported a case of an opening in the œsophageal wall of a mare, midway between angle of jaw and shoulder, resulting presumably from an external injury. When cut down on, a considerable amount of chewed food had found its way through the opening in the walls of the œsophagus into the adjacent tissue. It was kept well cleaned with antiseptic applications and gradually healed without other surgical interference. A portion of the food continued to find its way through the opening for some time, but finally closed up entirely.

Dr. Brown reported a case of breaking down of wall of œsophagus, the result of an abscess in strangles. Food had worked its way through the opening until such a quantity had collected that nothing could pass, and violent symptoms of choking were present. After cutting down and removing the food the parts were thoroughly cleaned with antiseptic wash, and the divided walls drawn together by means of silk suture passed through skin, muscles and divided edges of the wall of œsophagus, from above to below, and quilled at each side. The patient was fed on gruel for several weeks and made a good recovery.

Dr. Niles: I want to emphasize the importance of making a good big opening in the case of punctures in the feet; thoroughly disinfecting with carbolic acid, and then plugging the wound. I practiced for some time in the South, where tetanus is much more prevalent than in the northern climate, and found very few cases follow that mode of treatment.

Dr. Brown: What strength of carbolic acid do you use, and how often do you dress the wound?

Dr. Niles: I use the carbolic acid at least one-half strength.

* See following issue.

—one-half to full strength—sufficient to turn the tissues white. Sometimes one packing is sufficient; sometimes it will suppurate a little and it becomes necessary to dress the case again.

Dr. Austin uses carbolic acid full strength, then plugs up opening with equal parts of calomel and pulverized bloodroot.

The discussion here drifted to the use of slings which was quite animated—almost every member taking a hand, and served to show that slings are a “back number” in veterinary practice in Iowa.

Meeting adjourned for dinner.

AFTERNOON SESSION, 2 P.M.

As some of the members must leave the city early in the afternoon, it was decided at this point to take up the election of officers for the following year, which resulted in the election of Dr. W. B. Niles for president, Dr. E. E. Sayers for 1st vice-president, Dr. T. A. Bown for 2d vice-president, Dr. Jno. E. Brown for secretary and treasurer.

Board of Censors: Drs. G. F. Starkey, M. Stalker, and T. A. Bown. President appointed Drs. G. F. Starkey, A. B. Morse, and T. A. Bown, Committee on Collective Statistics.

The board of censors made their report on honorary membership, which was adopted as follows:

We, the Board of Censors of the I. S. V. M. A., do hereby recommend for honorary membership the following names, who are now non-residents of this State, but in time past have been valuable contributors to its meetings: Dr. T. S. Butler, Agre, Col.; Dr. C. A. Carey, Auburn, Ala.; Dr. E. P. Niles, Blacksburg, Va.; Dr. J. C. Norton, Phoenix, Ariz.; Dr. M. H. Reynolds, St. Anthony Park, Minn.; Dr. S. Stewart, Kansas City, Kan. And further recommend that they only be retained on our roll of honorary membership so long as they remain non-residents of Iowa, and should they return to the State will again be received as active members. Signed, Jno. E. Brown, E. E. Sayers, W. H. Austin, Board of Censors.

Committee on change of by-laws, made the following report:

We, the undersigned, hereby give notice that the following amendment to Section 1 of Article III of the Constitution will be offered at the annual meeting of the I. S. V. M. A. in 1894, so as to read : Applicants for membership must be graduates of legally authorized veterinary colleges in good standing, to be passed upon by the board of censors and reported to the society for final action. Signed: M. Stalker, Jno. E. Brown, S. H. Kingery, S. H. Bauman, W. H. Austin, G. J. Howell.

It was moved and duly seconded that the I. S. V. M. A. should meet during the fall of 1894 at Des Moines, exact date to be fixed by the president and secretary. Moved by Dr. Starkey and seconded by Dr. Stalker, that the association should meet all the necessary expenses, both past and future, of the committee on legislation while engaged in the duties of the office. Carried.

It was moved by Dr. Stalker and duly seconded, that the president and secretary correspond with the comita minora of the U. S. V. M. A. and endeavor to secure the meeting of that body in Iowa in 1895. Carried.

Moved and seconded that the papers and notes of this meeting be sent to the AMERICAN VETERINARY REVIEW for publication, on condition that the editor would furnish to each member of the association a reprint thereof. Carried.

The paper by Dr. Jno. E. Brown on "Practical Uses of Cocaine," was read and quite thoroughly discussed.

Dr. G. A. Johnson, of Sioux City, not being present to defend his paper on "Pseudo Rabies in Cattle," it was decided to omit the reading but have same published with the proceedings of the meeting.†

Dr. W. B. Niles read a very interesting paper entitled "A Bacteriological Study of Equine Fistulæ,"‡ by Dr. C. M. Day, but owing to the limited time no discussion followed.

* See following issue.

† See following issue.

‡ See following issue.

On account of the resignation of Dr. Thomas to act on the legislative committee, the president appointed as legislative committee Drs. M. Stalker, J. E. Brown, and G. A. Johnson. On motion of Dr. Brown, duly seconded and carried, that the association hold its next annual meeting in Des Moines during the fall of 1894, exact date to be fixed by the president and secretary. On motion the meeting adjourned.

JNO. E. BROWN, *Secretary, pro-tem.*

OBITUARY.

JOHN S. SAUNDERS, D.V.S.

The Massachusetts Veterinary Medical Association has to regret her first loss since her organization; the United States Association has lost a faithful member; the American Veterinary College has to sorrow for another death in her alumni. John S. Saunders died on March 20th, from hæmorrhage of the lungs, after an illness of one week and a day, within a few days of being 40 years old, thus confirming a kind of superstition of his, that he would not live to reach that age.

We all knew him, all liked him. He was friendly to all, and kind to every one who approached him. His place in our meeting may remain empty, but our thoughts will always fill it with the friendly smile and good face of him who now rests in peace.

Following is the report of a committee on resolutions appointed at a special meeting of the Massachusetts Veterinary Association, April 4, 1894.

Whereas, death has removed from among us our beloved member, Dr. John S. Saunders, and

Whereas, we feel *deeply*, the loss sustained by us in the early demise of one whom we all have respected as a professional brother, and loved as a genial companion.

Be it Resolved, that we hereby express our appreciation of his sterling qualities. Honesty, charity, good fellowship, were the traits of his character. Devoted to his profession, an untiring worker, charitable to his colleagues, speaking ill of no man, his example is one for us all to emulate.

By his death our association loses a valued member, the veterinary profession an ardent worker, the community an honest citizen.

Be it Resolved, that a copy of these resolutions be spread upon the records of our association, also forwarded to the family of the deceased, and to the veterinary journals for publication.

Signed,

L. H. HOWARD,	}	<i>Committee.</i>
AUSTIN PETERS,		
JOS. H. STICKNEY,		
F. H. OSGOOD,		
H. P. ROGERS,		
A. MARSHALL,		

CORRESPONDENCE.

March 15, 1894.

“VETERINARY EXHIBITS AT THE WORLD’S COLUMBIAN EXHIBITION.”

PROF. A. LIAUTARD, M.D.V.M.:

Editor of the AMERICAN VETERINARY REVIEW:

MY DEAR SIR: I notice in this month’s issue of your paper, a communication from W. L. Williams, entitled “Veterinary Exhibits at the World’s Columbian Exhibition,” and as the critic does not tell the whole truth in some particulars, and misrepresents things (I believe accidentally) in others, I desire in a friendly way to point out the errors as far as I am able. In the first place he says in substance that Illinois was the only State to make a veterinary exhibit from its agricultural college, but if the gentleman had examined section I, column V—6 in the Liberal Arts Building, he would have found in the veterinary space of the Michigan Agricultural College exhibit natural skeletons (ones in which the bones are held together by their natural ligaments) of the horse, cow, sheep and hog; one horse dissected and mounted in the standing attitude, showing the deep-seated muscles on one side and the more superficial ones on the other, while those parts affected in ordinary diseases, curb, bog-spavin and the like, were made as prominent as circumstances would permit. (In the very hot weather this specimen began to show signs of decomposition, so we deemed it prudent and best to dispose of it before the Fair was over.) There were also one hundred and twenty sketches of dissected sections of the horse, some done in oil, but most of them in

pencil, ten models of horses' teeth made from moulds that were obtained from living animals of the Cleveland bay breed, whose ages were matters of record; they illustrated the changes in the teeth, from one year old upwards, besides seven other models, all taken from accurate moulds of the original subjects, and illustrating various interesting features.

The above exhibits were one and all prepared by students under my direction, assisted by a demonstrator.

In addition we had some ten or fifteen photographs illustrating veterinary work, and our facilities for teaching it in a variety of ways.

I heard that several other colleges had veterinary exhibits, but I did not see them, however, I was always so much engaged in various public ways when at the Fair that I found very little time to look around.

When W. L. Williams describes the co-operative exhibit of the agricultural colleges and experiment stations, he says that there were Duzone models of horses teeth amongst other things, this of course was a mistake, but how it was made I cannot conceive, for each and every model had a label under it, and a large card was attached to the case stating that the models were made by the students of the Michigan Agricultural College, they were duplicates of the ones already mentioned in the other exhibit which I was responsible for (our boys should feel rather flattered when they learn that their work was mistaken for that of the far-famed French firm).

The half dozen actinomycotic jaws of cattle, etc., appear to have been treated in the same way as the teeth, and the labels were overlooked. They were prepared by Prof. Mayo of the Kansas Experiment Station, and certainly illustrated many features of this much-talked of disease in a very interesting and scientific manner. I also thought the pathological specimens contributed by Prof. Hinebauch, of the North Dakota Experiment Station, illustrated the points they were intended to, and that they were valuable specimens. The other articles mentioned were there, as were also some others not noticed by Williams;

of the latter the interesting writings of Liautard, Law, Smith, McEachran, Duncan, American veterinarians, and many others too numerous to mention were to be found in the case devoted to veterinary literature. There was also an interesting specimen showing the effect of a dehorning fluid applied to one side of the head on which all trace of the horn core was obliterated, while on the side which was not treated with the fluid, the horn core was fully developed, also five very nicely mounted heads of sheep, showing the changes which occur in the teeth from one to five years old.

I do not quite understand what Professor Williams means to insinuate by the sweeping assertion that the examination of facts will show that the teaching of Veterinary science in agricultural colleges is not nearly what it should be, either in scope or quality, so will not reply to that paragraph at this time.

We are also informed that the task of superintending this exhibit went a begging; well as far as I am concerned this was not my fault, it is true that in the spring of 1891, I was requested by Dr. Armsby, chairman of the committee on co-operative exhibit at the World's Fair, to take charge of the veterinary alcove, but owing to so many veterinary duties requiring my attention at that time, I felt myself in duty bound to decline the honor. I afterwards learned with very great pleasure that Professor Williams, of Purdue University had accepted the position, and in course of time I received a letter from him asking me what our college would contribute towards the exhibit, and also doing me the honor of asking for suggestions as to how the work should be carried on. My reply in substance was, that at that time I was not in a position to offer anything (I had no authority at that early date), but made some suggestions as to how I thought the work should be advanced, and that was the last I heard of the exhibit until the close of 1892, when I was grieved to learn that Williams had abandoned the position, and I was once more asked to take charge of the work, I consented, and to make a long story short, I commenced operation in January, 1893, with what success is for others to say.

I can hardly close this without expressing my extreme regret that my brief correspondence with Professor Williams should have brought the statement from him that "Even Dr. Grange declined to contribute anything whatever to this exhibit until he had been made superintendent of it," a sentence which according to my interpretation places me in the light of a most contemptible narrow-minded creature.

Trusting that you may find space for these corrections in the next issue of your valuable journal.

I am, my dear sir,

Yours most respectfully,

E. A. A. GRANGE, V.S.

VETERINARIAN WANTED.

CLINTON, N. J., April 12, 1894.

DEAR SIR: Is there any good veterinary about to graduate from your college that would like a *good* place to locate. If so, will you tell him to come and see us or send us his address, so we can write to him, as there is a good opening here for a first class doctor and hope you can send us one.

Yours,

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AMERICAN VETERINARY REVIEW,

JUNE, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

NORMANDY BREED OF CATTLE.—That tuberculosis prevails to a great extent in the United States, and especially in the eastern part of the country, is now a well-acknowledged fact. Tuberculine has spoken in many cases. The people are getting uneasy about all that has been said and written on the subject. And now we have legislation on the subject—indemnity is granted for the destruction of tuberculous stock. Our owners of fine cattle (Jerseys especially, among which tuberculosis is reported so prevalent,) are having all their herds tested. To what point will all this excitement bring us to? Where will the dairy men look for animals to carry on their business. We believe that these are questions which are occupying their attention.

In glancing over the breeds of milch cows which we think may be called to take the place of the late fashionable race, we are well attracted by the Norman breed, the Cotentine as they are known on the Continent of Europe. This breed is comparatively unknown in America, but few having been imported; but their superior qualities as milkers and as meat producers will necessarily attract the attention of owners of fancy cattle.

“The breed is claimed to be the finest milking race in the world. The Norman cow frequently produces 35 quarts of milk in the 24 hours, and have been known to produce 50 quarts. The average yield of milk per cow is about 300 quarts per year. The butter is of such quality that some of it has been sold as high as one dollar per pound. Their breed furnishes to the

French markets some of its largest animals, giving the most delicate and savory meat." With such qualities as have been proven by the importations that have been made into this country, and with the scientific established fact that contagious diseases, such as pleuro-pneumonia and tuberculosis, are unknown among the Cotentine cows, are we not justified in believing that with the new impetus that will necessarily be given to the importation of fancy milkers, the Normandy breed is bound to occupy the first rank, and take permanently the place of those that tuberculosis and tubercule will condemn out of the herds of our wealthy cattle owners?

REGULATION OF VETERINARY PRACTICE.—This is a subject which seems as much to impose itself upon legislators of nations as their governmental action is demanded by those who are engaged in veterinary practice. There is no doubt that this requirement is the necessary conclusion of the progress made by the profession in public estimation, of its value and of the services that it has rendered and can continue to render upon a larger scale when it has at last received the recognition that it deserves.

This regulation, however, is no simple matter to deal with. In this country several States have tried to effect it. Some results have been obtained—certain laws have been passed—from some of them good results can be looked for, but for others the law is so much a dead letter, or the provisions so ridiculous, it is worse than no law at all. But it matters not, the subject is thus agitated. In our last number we published the text of an Act of the Legislature of Virginia, which we were told had become law in that State, to-day one of our correspondents sends us a correction which we publish with another law. Our friend, Dr. A. W. Clement, has also written to us about the bill passed by the Legislature of Maryland. And so it progresses, slowly it is true, but going forward and each legislature brings on new projects and we may hope new improvements.

WE have repeatedly stated that when once Americans would begin to realize the importance of the veterinary profession, it would take but little for her to be ahead of old Europe. While these remarks may have brought smiles of ironic incredulity to the faces of some of our readers, it is certain that nevertheless the proofs of the correctness of our suggestions are gradually becoming more and more evident, especially in this subject of legislative regulation. Why, as we have said before, many of our States have passed laws to that effect, and how long is it that the veterinary profession has existed in America? Look then at France, the birthplace of the profession, the nursery we might say of the veterinarians of the world, and notwithstanding the energetic efforts made by the whole body of her veterinarians it is only recently that a bill has been introduced in the Chamber of Deputies by the Secretary of Agriculture to reach the point where *we* have already arrived. Our French colleagues have for a long time urged the necessity of such protective measures, but as yet have not succeeded as well as we have on this side of the Atlantic. They have our best wishes for the passage of their bill.

*
* *

In connection with this same subject of "regulation of veterinary practice" there is another channel which of late seems to have been worked up, and that is the appointment of State Board of Examiners. Pennsylvania, New York, Ohio, and we believe other States have entered into the field and gladly we watch the movement and anxiously wait for the result. A State Board of Examiners, however, we fear might do as much mischief as if there was no law nor examination. To be of any advantage it must examine only graduates of veterinary medicine, and not *persons* desirous to practice without diplomas. The days of the self-made practitioner are gone, they must not be revived by legislative action, and we hope that veterinarians will strongly oppose the passage of any bill which would give a new start in life to quackery, so much more dangerous that it would be supported by political influence, as this may after all find its way in

governmental appointments. State Board of Examiners must be appointed to examine or grant certificates of qualifications to veterinary graduates and only to those who may wish to establish themselves in said State, and by veterinary graduates must be well understood all who may possess a diploma no matter from what school, or of what nationality.

McKILLIP'S VETERINARY COLLEGE.—It is with pleasure that we correct an item published in one of our late issues in relation to the above named institution, whose fate is now in the hands of Prof. O. Schwarzkopf, V.M.D. A school started as a private undertaking, with a course of three years of six months each, is a mark of progress in veterinary teaching which deserves all recommendation at the hands of all veterinarians.

Here is the correction :

CHICAGO, April 20, 1894.

To the Editor of AMERICAN VETERINARY REVIEW :

DEAR SIR :—In the April issue of the REVIEW we notice the news that the McKillip Veterinary College at Chicago will start out as a two-term school of twenty-four weeks each. We wish to state that the writer of this note has been greatly misinformed. From the start it has been our intention to bring this school up to the required standard of education and make it in every respect a credit to the profession, and fortunately we are in possession of means to do so. While it appears impracticable to start, in Chicago, a college with an eight or nine month course, it has been definitely decided to adopt a three term curriculum of six months each. We hope not to be misjudged by the mentioned note and therefore kindly publish this statement in your next issue and oblige.

Yours respectfully,

McKILLIP VETERINARY COLLEGE.

L. A. MERILLAT, *Secretary.*

AN ERROR OF NAME.—It is through mistake that we printed the name of Prof. J. J. Harger in our last issue in connection with the report of Chairman of the Committee on Sanitary Science and Police. Dr. Robert Formad was the chairman and is entitled to the credit of that excellent article.

DR. W. BRYDEN.—In informing the friends of the Doctor of the severe attack of illness which for a while threatened his life, we are happy to say that he is now considered out of danger.

ORIGINAL ARTICLES.

PREVENTION OF TUBERCULOSIS.

By DR. J. M. PARKER, Haverhill, Mass.

A Paper Read before the Massachusetts State Veterinary Association.

Believing that the State Veterinary Association ought to lead in formulating laws for the attempted prevention of tuberculosis, I have endeavored, in a rough way, to bring the matter before the Association, so that, if thought advisable, some action might be taken on the matter.

At the present time prophylactic measures for the purpose of controlling and checking the spread of tuberculosis are attracting a great deal of attention, not only from the Veterinary profession, but Medical Associations and State Boards of Health throughout the country are taking the matter up, and in several states the Health officials have placed tuberculosis on the list of Contagious Diseases, and otherwise have taken decided action on the matter.

Michigan was the first to adopt this line of action, and on September 30, 1893, "The Michigan State Board of Health unanimously decided that consumption is a dangerous, communicable disease, and must be reported by physicians and householders to the several Boards of Health."—*Medical Record*, November 18, 1893.

Pennsylvania next came into line, and in October the "Philadelphia County Medical Society" appealed to the Board of Health of Philadelphia to place tuberculosis upon the list of contagious diseases to be reported to the Board.

The Health Department of the State of New York, acting on the advice of Dr. H. M. Biggs, the Bacteriologist of the Department, has taken a similar position, (see page 832, *Medical Record*, December 23, 1893).

While at Chicago the American Public Health Association,

in conjunction with the International Congress of Public Health, adopted the following practical recommendations for the prevention of disease:

1. The notification and registration by health authorities of all cases of tuberculosis which have arrived at the infectious stage.
2. The thorough disinfection of all houses in which tuberculosis has occurred, and the recording of such action in an open record.
3. The establishment of special hospitals for the prevention of tuberculosis.
4. The organization of societies for the prevention of tuberculosis.
5. Government inspection of dairies and slaughter-houses, and the extermination of tuberculosis among dairy cattle.
6. Appropriate legislation against spitting into places where the sputum is liable to infect others, and against the sale or donation of objects which have been in use by consumptives, unless they have been thoroughly disinfected.
7. Compulsory disinfection of hotel rooms, sleeping-car berths, and steamer cabins which have been occupied by consumptives, before other persons are allowed to occupy them.

The reports and recommendations of the Committee were adopted.

Massachusetts ought not to be far in the rear, and to give credit where it is due, I believe at least one of the local inspectors in Massachusetts has advised the Health officers of his locality to place tuberculosis on the list of contagious diseases, (I refer to a report by Dr. Winchester of Lawrence, to the local Board of Health).

In Massachusetts the cattle commissioners are an independent commission, having no connection with the Board of Health, and so far there has been no adequate legislation sufficient to check the spread of tuberculosis among our dairy stock. The same applies, though in less degree, to the action taken by the State of New York, for it is not enough to isolate and destroy infected cattle, *such action alone does not strike at the root of the matter. Hitherto the influence exerted by the conditions and surroundings under which the animals are kept has been almost entirely overlooked.*

Seed always requires a proper soil before it will develop. The bacilli require a suitable culture media, and we know that tubercle bacillus is one of the most exacting in this respect.

It is not sufficient that the bacilli should be inhaled, we

know that all animal bodies in a healthy condition have a great disease-resisting power, and it requires more than the mere presence of the bacteria to cause the disease. In other words, the bacteria is only a small part of the disease. As a contributor to the *Medical Record* (September 2, 1893) truly says, : "There are other factors equally as important in the causation of the malady, as the part played by the microbe."

In the report of the Congress for the Study of Tuberculosis held in Paris in 1891, it is said, "If there is one thing above all others that is learned from the many discussions upon this well-worn, but still obscure subject of tuberculosis, it is that the bacilli alone does not cause the disease. The host is obviously not the least important element."

We must all acknowledge that there is in the constitution of the individual before bacilliary infection takes place, something that determines the fact of infection, and that largely determines the course and character of the results of infection. Parasites thrive only under certain conditions. Remove the conditions which are favorable for their propagation, and they disappear. "You take away their lives when you take away the means by which they live," has been well said. In other words, build up the health and constitution of the animal body, increase the disease-resisting powers, and you are taking a long step in the right direction. On the other hand, pay no attention to the general health of the animal, allow its general health to run down, weaken its constitution by breeding young, and breeding continuously, force the milk supply, and continue milking while the cow is in calf, feed high and give little exercise, keep in a close, hot barn in unsanitary surroundings, and you produce an animal that is just in the right condition to contract disease, yet these are exactly the conditions usually found in the average dairy farm.

Breeders and farmers pay little or no attention to the general health and constitution of their dairy stock. They seem to consider excessive milking qualities to be the sole aim and purpose of breeding. I had a good illustration of this the other day. My

attention was called to a heifer 14 months old. It was strong and rugged for its age. The owner asked me what I thought of breeding her when she came in heat, a farmer standing near-by remarked that it was the best thing he could do. I asked him why. He said because she would become a better milker. That, I believe, is a fair sample of the way farmers look on the matter. *He would have her a big milker at whatever cost to her strength and constitution.*

Again, what is to be said about the practice of continuing to milk a cow while carrying a calf. Through use and want it has become the invariable practice, at the same time I believe it to be one of the most serious of the many serious conditions that tend to sap the strength and vitality of our dairy cattle.

Probably you are aware what the result would be, if a woman were to nurse a child while pregnant, yet not only is this invariably done in dairy cows, but the milking qualities are forced to the utmost limit, and if she gets a month's rest before calving, she is in luck. On top of this, inn-breeding is commonly practised, and a cow is expected to bear a calf with unfailing regularity year after year, and if unable to do so, she is thrown aside as worthless.

Nor is this all—all of you are familiar with the hot, foul air, reeking with the smell of the cattle, that will meet you when the barn door is opened in the morning. The cows in many cases are packed in, every crevice and opening through which the air may gain admittance is blocked up, and they are kept in these conditions during the entire winter, with little or no exercise. You have here just the conditions that are most suited for the development of the disease.

Introduce a consumptive cow into a herd kept in this way. The cow has a cough possibly, or more or less of a discharge. The discharge comes in contact with the woodwork. This dries up, particles fall off, and mix with the hay, and dust and chaff. The barn is close and stuffy, the animals close together, there is no fresh air to carry away the poison-laden atmosphere. They breathe the same air over and over again, *with their noses*

in the most dangerous place, close to the ground, where the dust and dirt accumulate. What wonder if the whole herd or a large percentage of them become diseased in a short space of time.

And it is not only in the ventilation. What about the manure heaps, what about the slime and filth so often heaped up in the cellar below, what about the water supply? The cattle often get their water supply from what is practically little better than a cesspool.

Are these animals living in healthy conditions? Is it common sense to expect them to be strong and healthy, and free from disease.

To counteract this state of affairs, the Cattle Commissioners have been in the habit of taking *only* the pronounced cases and destroying them, and leaving animals that are predisposed to disease, animals that are weak constitutionally, not to mention those infected animals that they have failed to discover, and leaving them right in the midst of infected surroundings. The result is what one would naturally expect: little or no progress has been made in eradicating the disease, and if no change is made in the system at present in use, their work might be continued indefinitely without any practical result.

Instead of being in the hands of an independent Board, the supervision of the matter should be in the hands of the State Board of Health. Of course it is not possible for any great change to be made at a jump, but it is possible for a system of education to be begun at once, always keeping in view the ultimate adoption of a more perfect system of state supervision and inspection of Dairy Farms.

1. The whole matter should be transferred to the State Board of Health. The Board of Agriculture shall be expected to co-operate by spreading information on the subject among farmers and stock-raisers by means of lectures and pamphlets, as has been done in Pennsylvania and other states.

2. The State should be divided into districts. Each district to be in the charge of a competent veterinary surgeon as Inspector, who shall be responsible only to the Chief State Inspector.

3. One or more quarantine stations shall be established in each district, so that suspicious cases, or cases to be kept in quarantine may be sent there to be kept or killed, as is thought fit.

4. Owners of cattle killed shall be compensated by the State.
5. No person shall be allowed to sell milk without a license, the license to be granted by the State, after a satisfactory examination of the dairy and herd by the Inspector in the district.

The Inspector's duties shall embrace the following points :

1. He shall make perodical visits to all the licensed dairies in his district.
2. He shall condemn all tuberculosis cattle, suspicious cases shall be tested with tuberculine, and if is thought proper, it shall be sent to the quarantine station of the district, to be killed or otherwise as thought fit. The owner may have the privilege of keeping suspicious cases, under certain restrictions, on his premises for the purpose of turning into beef, if he so desires. After the removal of a tuberculosis animal, the Inspector shall see that the box or stall is thoroughly disinfected.
3. He shall condemn as unfit for dairy purposes all animals in an untrifty or sickly condition.
4. He shall not grant licenses to dairies in a dirty or unsanitary condition. In this connection the following points should be noticed:
 - (a) The barns must have a minimum of at least 600 cubic feet for each animal, no height of over 15 feet to be included. (The cubic capacity to be greater if thought advisable).
 - (b) They must have sufficient ventilation, to the reasonable satisfaction of the Inspector.
 - (c) The barn must be light to the reasonable satisfaction of the Inspector.
 - (d) The floor of the barn must be tight so that the urine will not soak through and drip into the ground or into the cellar below.
 - (e) The manure shall not be allowed to lie in piles against the barn walls, but shall be a suitable distance from the farm buildings.
 - (f) The water shall be of good quality, and shall not be taken from wells in or near the barnyard, nor from wells so situated as to allow the surface drainage to flow into it

Of course, as before remarked, it would be impossible to enforce all these requirements throughout the State at short notice, but the spirit of the instructions could be carried out, and gradual changes made, the Boards of Health and the Inspectors always keeping in view the ultimate end to be attained.

In other states the Boards of Health have gone to work in a business-like way, in attempting to control tuberculosis in the human being, why cannot the State of Massachusetts do the same with her dairy cattle? I believe the time has come when something definite should be done. No better time could be chosen than the present, and with this end in view, I move "That a committee be appointed to report to this Association on the matter, so that the Association will be able to communi-

cate with the State Medical Society, and the State Board of Health, inviting thair presence and assistance in discussing intelligently the best method of controlling and checking the spread of Bovine Tuberculosis."

ACTINOMYCOSIS.

By DR. G. F. STARKEY, Boon, Iowa.

A Paper Read before the Iowa State Veterinary Association.

A careful study of the literature on this subject shows that until the latter half of the present century the true cause had not been discovered; and not until 1877 was the germ discovered by Rivolta, in 1863, recognized as constantly present, when Bollinger pointed out this fact which was further supplemented by the discovery of Israel, in 1878, of a germ which proved to be the same in similar diseased growths in man.

These facts were not at once accepted by the Veterinary profession as will be seen by referring to *William's Prin. and Prac. of Vet. Sur.*, edition 1879, page 199; *J. W. Hill's Bovine Med. and Sur.*, 1882, page 138; *Clatter's Cattle Doctor*, page 62; and *Steel's Diseases of the Ox*, page 483.

These authors describe the disease under the name of Osteosarcoma, Spina Ventosa, Fibro-plastic degeneration of the bone or a disease due to injury or a tubercular diathesis of the system.

Very little original investigation into the cause and nature of this disease had been made until within the last twenty-five years, and much of this has been prosecuted in vain, owing to a misconception of the cause by many of the earlier investigators.

Thirty years ago Rivolta discovered Actinomyces, and fourteen years later Bollinger recognized the fact that they were constantly present in, and the cause of the disease now known as Actinomycosis.

This disease affects cattle, horses and many other smaller animals including man. From the year 1878, when it was shown by Ponfic that Actinomycosis in man and the lower ani-

mals was due to one and the same cause, investigation assumed a more scientific basis. The germ has not yet been definitely classified. Many observers place it with the Fungi, while some others regard it as one of the higher Bacteria.

Since the discovery of the cause, many investigators have been busy studying the nature of the disease in the hope of finding a radical cure.

Such a remedy, should one be discovered, has besides a sanitary interest, a financial consideration of no mean aspect, for thousands of cattle in this country are greatly depreciated by its constantly increasing prevalence.

In nature this disease resembles some other, inasmuch as it is produced by the inoculation of living germs into the animal body. In different animals it assumes different forms; but I will confine my article to its appearance and propagation in the bovine species, and its relation in such to the public health.

Study and observation convince me that this disease is infectious by inoculation as pointed out by Professor Crookshank, and demonstrated by Dr. F. B. McCall and myself in separate experiments during the summer just past. In our experimental propagation of this disease the material was secured by myself and after a microscopical examination to confirm the presence of *Actinomyces*, small pieces of the tumor were introduced beneath the skin in some cases while in others the contained plastic material was used for that purpose.

Positive results were obtained by both methods even after the material so used had been exposed for two days before being used for experimental purposes. The period of latency was from a few weeks to a few months; and the failures to produce the disease by this method were none.

The season was warm, being from May to September. What results might be obtained during different atmospheric conditions, I am unable to state.

Observation in several hundred cases in central Iowa show that under the influence prevailing in this district, the actinomycotic new formations appear most frequently in the sali-

vary glands, and the subcutaneous connective tissue around the angles of the inferior maxilla, upon its sides, in the inter-space between the rami and upon the neck below the base of the ear; while the lymphatic glands and subcutaneous connective tissue of the flanks, legs, sides, and shoulders were next the most frequent seat of the disease; and lastly the tongue and lungs. I never have witnessed a case in which the abdominal organs were affected; but find such recorded by Drs. Salmon and Smith on page 410 of the *Special Report on Diseases of Cattle and Cattle Feeding* issued by the Bureau of Animal Industry, 1892.

From the authorities of other countries we learn that the seat of the disease is not the same in all districts. In Germany, for instance, the tongue and pharynx are the seat of these actinomycotic new formations. In England as in some parts of this country where the conditions are very similar, we find them about equally divided between the internal and external structures about the head; while in some parts of this country where the conditions are different we find that the pathological growths predominate in the external forms. To illustrate, on the northern ranges in Idaho, Wyoming, Montana, and North Dakota there are but few, and those principally of the osseous type. The inferior maxillæ being most frequently the seat of the transforming growth. In Illinois, Iowa, Minnesota, Missouri, eastern Kansas and Nebraska and southeastern South Dakota the disease is principally located in the superficial gland structure and subcutaneous connective tissues. In Germany and parts of England and America the tongue is most frequently affected. The reason for this variation I think has been largely overlooked. In this country many stock men attribute the trouble to dehorning, others to stagnant water, while still another class admit that they know little of it except that of late years the cases seem to be more numerous.

In Europe Veterinarians recognize the true cause and generally attribute its source to forage grown on lands that are frequently flooded, and especialy to the use of straw for forage,

when it has been grown on such lands—barley straw being considered most dangerous.

Among Veterinarians in America there seems to be no generally recognized opinion concerning the susceptibility from the use of the various kinds of forage as food; but almost all agree that it is due to *Actinomyces* and then seem to overlook its method of propagation other than to admit that it is by inoculation. This opinion is verified by the attempts of many excellent men to propagate the disease by injecting small quantities of the morbid material containing the fungus, directly into the venous system, or into the peritoneal cavity. There are some facts that must be potent to any critical observer.

First among these is its increasing frequency in the Mississippi valley.

Second, that it affects only those parts subject to frequent traumatism.

It is a well-known fact that the germ will not develop upon either the unabraded surface of the skin or mucous membrane; but that an opening through which it may enter the subcutaneous tissue is absolutely necessary.

That this opening is made by accidental injury there can be no doubt. You will at once agree when your attention is called to the fact that in the Mississippi basin where the greater number of cases affecting the subcutaneous structures are found, the cattle are kept in pastures, yards, and pens that are fenced with barbed wire.

Through these fences the cattle poke their heads and are often slightly wounded when withdrawing them. This is the case where the wires are so close together that the animal is obliged to turn its head sideways in order to accomplish its purpose—to eat forage growing on the opposite side of the fence.

In this case very ample opportunity is offered for puncture of the parotid and other gland structures. In breaking or crowding through these fences the skin upon the legs, flanks, shoulders, etc. is punctured in the same way. While a herd of

cattle are being wounded in this manner they continually feed and roam over the very objects that afford a resting place for the germ and occasionally one or more are inoculated and the fungus so introduced develops oftentimes into a tumor. This may not at first seem plausible, but when you stop to reflect and consider that this disease has increased in the subcutaneous forms with the increased use of barbed wire for fencing, and has not so increased where wire was not used, you will recall how often you have seen animals so injure themselves in the very places where these tumors most frequently exist, and how readily the fungus which must be present in large numbers on the forage plants might be brought in contact with the subcutaneous tissue.

On the western ranges where wire is less in use the forms seen are principally those affecting internal structures such as may be occasionally punctured by some sharp object, as a stone, that may be chewed by the animals, or that form which affects the bones themselves and has the opening for inoculation through the alveoli of a carious tooth. These cases however are quite rare. The lingual and pharyngeal type of the disease is most common where cattle are kept stabled and fed on sloppy and other food in which by chance there is more danger of sharp and pointed objects, being secreted and making openings through which the germs contained on the rough forage may enter. In the lungs the diseased growth is probably caused by particles of irritating material to which germs adhere, being inhaled and setting up centers of inflammation and suppuration, which affords the germs a suitable place for development. The germs having thus entered the openings accidentally made meet with some resistance to their development. The leucocytes attempt to destroy them and if they chance to be located in any muscle having a good blood supply and not too great a supply of conductive tissue where a lodgment may be effected until the growth is commenced, they are completely destroyed.

(To be Continued.)

REVIEW OF MY WORK WITH TUBERCULIN.

By DR. J. FAUST, V.S., Poughkeepsie, N. Y.

Mr. — has a fine herd of Guernsey cattle, kept in good condition.

These cattle were examined three or four times a year by a veterinarian, who occasionally destroyed one. Mr. —, not being satisfied with this mode of operation, employed another veterinarian to examine his cattle with the first veterinary. This examination was not satisfactory, and a few days after I was called, and requested to examine the entire herd.

I found three cases of suspected tuberculosis which, on post-mortem, showed marked lesions of tuberculosis.

I was then requested to use tuberculin on the herd, with the following result:

No.	BEFORE INJECTION.		AFTER INJECTION.						
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M	
1	101.6	103.2	102.8	106	106.4	106	105.5	105	General tuberculosis.
2	101.2	102.5	102	104.5	106.6	106.5	105.5	105	Awaiting slaughter.
3	101.5	102.2	101.5	102.5	102.6	102.5	105.5	103	" "
4	103	103	103.2	106.2	107.2	106.5	107	105	Mediastinal, lungs affected.
5	101	101.6	100.6	103.8	105.2	104.5	104	104	Retropharyngeal, mediastinal, lungs and liver affected.
6	100	101.5	100.5	101	102.2	102.2	103	102	To be retested.
7	101.2	100.6	100.6	101	101.6	101	101	101	Not destroyed.
8	100.5	102.2	102.5	107	106	104.6	105	105	Retropharyngeal, mediastinal, lungs affected.
9	101.5	111	103.2	106	106.5	105.2	105	104.5	Mediastinal, lungs affected.
10	101.5	101.5	101.5	101.6	103	102.6	104	103	To be retested.
11	100.6	102	103.2	105.8	106.2	105	105	105	Retropharyngeal, mediastinal and lungs affected.
12	100.5	102	101.6	105.2	106.5	106	106	105	Mediastinal, lungs and liver affected.
13	101.2	102	102.2	103.5	106	105.2	105.5	105	Retropharyngeal, mediastinal and lungs affected.
14	102.2	102	102.5	102.2	103.2	103	103	103	To be retested.
15	102.5	102.5	102	101.5	103.2	102	103	102	" "
16	102	102	101.8	101.6	103.4	102.5	102	102	" "
17	101	102.2	101	101.5	101.6	101.6	102	101.6	Not destroyed.
18	101.6	102	106	107.5	106	105	104.5	104	Retropharyngeal, mediastinal and lungs affected.
19	101.2	100	102.5	105.8	106.2	106	105	105	Both lungs affected.
20	101.2	102	102	102.2	103	102.5	103	102.5	To be retested.
21	101	100	101	100.5	103	105	105	102	Awaiting slaughter.
22	101.5	99.5	101.5	101.5	102	102	101	101	Not destroyed.
23	104	103	106 $\frac{1}{2}$	106.6	106.5	106.8	106	105.5	Mediastinal, lungs and liver affected.
24	101.5	102	102	102	101.5	101	101.2	101	Not destroyed.
25	100.2	102.5	102	102.2	102	101.5	101	101	" "
26	100.6	103	103	106.5	105.5	103	104.2	105.5	General tuberculosis bad.
27	102.2	101	103	103.2	103	102	101.5	101	To be retested.
28	101	101	100	102.5	103	102.2	104.5	102.2	" "
29	102	101.5	101	101.4	101.5	102	102	101.5	Not destroyed.
30	101.5	102	102.5	102.2	101	102	102	101	" "
31	100.6	102	102	102	102.2	101.5	101.5	101.4	" "
32	100.5	101.5	100	102	101.5	100.5	101	101.3	" "
33	101.2	108	103	105.5	106.2	104	104.2	103.5	Mediastinal and lungs affected.

No.	BEFORE INJECTION.		AFTER INJECTION.							
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M		
34	101.5	101	102	102	102	101.5	101	101	Not destroyed.	
35	101.5	101.5	101	102	102	102	102	102	" "	
36	101	102	101.5	102.5	105.5	105.5	104.5	104	Retropharyngeal and mediastinal affected	
37	101.8	101	100.5	102.2	101	102.5	102	102.5	Not destroyed.	
38	101.5	101	102	103	102.5	101.2	102.4	102	" "	
39	101	101.5	103	106	107	105.4	105	103	Mediastinal and lungs affected.	
40	101.2	102.2	102	103	102.2	101	103	102	Not destroyed.	
41	101	101	102	103.2	105.4	104.4	106	104.5	Mediastinal, mesenteries, spleen affected.	
42	102	102	102.5	104.2	106.5	106	106.5	104	Retropharyngeal, lungs affected.	
43	101	101	102.5	104.5	107	105	106	104.5	General tuberculosis.	
44	101	101	104	106.5	103	106	106.4	104	" "	

Mr. — has a herd of Guernsey, Holstein and Ayrshires kept in very good condition.

History.—This herd has had tuberculosis for a number of years; every year one or two would die or be killed, and on post-mortem show marked lesions of tuberculosis. I was requested to examine this herd, and found five suspicious cases which, on post-mortem, showed advanced lesions of tuberculosis.

Mr. — then requested me to test his cattle with tuberculin, with the following result:

No.	BEFORE INJECTION.		AFTER INJECTION.							
	5 A M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M		
1	101	101	104.5	105.5	106.2	105.5	104.5	104	Mediastinal and lungs affected. Not destroyed.	
2	102	101.5	102	100.6	103.2	103.2	103	103		
3	101	102	102.1	100.8	106	106	106.2	105		
4	102	103.3	104	104.8	104.5	105.2	105	105	" " "	
5	102	100.5	102	103.5	106	105.5	105	104	" " "	
6	101.5	101.3	102.6	103	103.5	102.6	102	102	Not destroyed.	
7	102	102	102	101.3	101.2	101.2	101	101		
8	101.5	100.6	102	100.8	101.5	101.5	100	100.5		
9	101.5	100.6	102	103	106.6	106.5	106	105	" "	
10	102	101	102	100	103	103.3	103	103	Mediastinal and lungs affected.	
11	101	101	102.3	101.5	105	104.5	104	103	Not destroyed.	
12	100	101	102.5	105	106	105.2	105	104	Mediastinal affected.	
13	101	101	102.5	101	105.5	106.5	106	105	" " "	
14	102	101.5	103	100.6	100.5	100.5	100	100.5	" " and lungs affected.	
15	102	102.5	102.5	102.5	103	103	102	102	Not destroyed.	
16	101	101	102	102	106	106.2	106	105	" "	
17	102	101.6	104.8	102.5	102.5	102	101.5	101	Mediastinal and lungs affected.	
18	102.5	102	102.8	103	102.5	101.5	101	101	Not destroyed.	
19	101	101.5	103	102.6	102.5	102.2	102	102	" "	
20	102	102	102	101.3	101.5	102	101.5	101	" "	
21	101	101	103	106.8	104.5	103	103	103	" "	
22	102	101	101.5	101.8	100.8	101.5	101	101	Lungs affected.	
23	102	101.5	102	102	101	101.5	101	101	Not destroyed.	
24	102	102	102	108.8	101.5	102	102	101.5	" "	
25	101	101.6	103	103	102	103	102.5	102	" "	

No.	BEFORE INJECTION.		AFTER INJECTION.						
	5 P M	10 P M	1 A M	7 A M	9 A M	11 A M	1 P M	3 P M	
26	102	102	105	107	106	105	105	104	Mediastinal and lungs affected.
27	102	101.5	103	102.3	101.2	102	101.5	102	Not destroyed.
28	102	101	103	104	104.5	103.5	103	102	Mediastinal and liver affected.
29	101	101.5	102.3	102	101.5	101	100	101	Not destroyed.
30	102	101.5	102	107	106.4	106	105.5	104.5	Both lungs affected.
31	102	102	103.5	102.5	100	101.5	102	101	Not destroyed.
32	99.5	102	103.5	103.5	100	101	101	101	" "
33	101	102	103	103	100	100	100.3	100	" "
34	101.5	101	102.5	102.5	100	102	102	102	" "
35	100	101	103.5	102	100	101.5	101.5	101.3	" "
36	101	101	101.5	103	102	101.5	101.5	101	" "
37	101	102.5	103	102.5	100	101	101.5	101	" "
38	100.5	102	102	102	100	102	102	102	" "
39	102	102	101	102.5	100	101	101.5	101	" "
40	101	102	103	102.6	101	101.5	102	102	" "
41	99.5	101	102	103.3	100.5	101.3	101	101	" "
42	100	101	101.5	103.3	101	101	101	101	" "
43	99	101.5	102	103	100	101	101	101	" "
44	101	101.3	102	103.3	100	102	102	101.5	" "
45	100	101	100.5	101.5	102.5	103	104	103.5	Mediastinal, lungs and liver affected.
46	100.5	102	101.5	102.5	101	102	101.5	101	Not destroyed.
47	101	101	101.5	103.3	102	101	102.6	102	" "
48	101	100.2	106.5	106	103.5	102	101.3	100.5	Retropharyngeal, mediastinal and udder affected.
49	102	102	103	104	102	102	101.5	102	Not destroyed.
50	101	101	102	103	105.6	104	106	104	Mediastinal and lungs affected.
51	101	100	101	103	102	102	101	...	Not destroyed.
52	101	102	103	104.5	103	102	102	102	Liver very badly affected.

Remarks.—Mr. ——— employed a Dr. F. Martin, D.V.S., of Fishkill, to witness post-mortems. Every cow that reacted proved to be tuberculous to the doctor's satisfaction.

Mr. ——— has a fine herd of grade cattle, kept in good sanitary condition.

History.—About five years ago, Mr. ——— bought 20 cows from a tuberculous herd; since that time he has been losing one or two a year. The last one of these 20 cows reacted to the test, and was killed and proved to be tuberculous. On physical examination five were killed and proved to be tuberculous.

Then, at the request of Mr. ———, the remaining herd were tested with tuberculin, with the following result:

No.	BEFORE INJECTION.		AFTER INJECTION.							
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M		
1	102	101	100	101.3	101.5	101	101	101	Not destroyed.	
2	102.5	101.6	101	105	106	107	107	106	Mediastinal and lungs affected.	
3	102	100	101.5	102	102.3	104	104.5	104.5	Mediastinal, lungs and liver affected.	
4	101.6	102	101.5	101.5	102	103	100.2	101	Not destroyed.	
5	101.8	100	101	101.8	101.6	100	103.2	105	Mediastinal, lungs and liver affected.	
6	101.8	101.5	101	101.5	101	100	100	101	Not destroyed.	
7	102	102	102	101.5	102	102.2	101	101	" "	
8	101	100	100	102	103.3	105	106	105	Mediastinal and liver affected.	
9	102	101	101	102	101.8	101.5	100.5	101	Not destroyed.	
10	101.5	100.5	100.6	103	10.72	106.5	106	105.5	Mediastinal and lungs affected.	
11	102	101.3	101.5	101	101.5	101	101	101	Not destroyed.	
12	102	101	100	101.5	101.6	101.8	103	104	Mediastinal and liver affected.	
13	102	100.6	101.3	101.8	103.3	104.5	104.5	104.7	Mediastinal and lungs affected.	
14	101.5	101.3	100.5	102	102	102	102	102	Not destroyed.	
15	102	100	101	101.5	101.5	101.8	101	101	" "	
16	101.5	99.8	100	102.3	102	102	101.5	101.2	" "	
17	102	101.8	101.3	102	102	100	100	101	" "	
18	101.5	99	100	102	102	100	99	100	" "	
19	102	101	101	101.5	102.5	103.5	106	106.1	Mediastinal and lungs affected.	
20	102.8	101	100.3	101	102	101.5	100	101	Not destroyed.	
21	101	100	100	101	101	99.5	99	100	" "	
22	101	99	100	101.5	102.5	102.3	103	104	Mediastinal, lungs and liver affected.	
23	102	101	102	101	101.8	101.5	101.5	101.6	Not destroyed.	
24	101	100	101	103.1	103.3	103.5	104	104.3	General tuberculosis.	
25	101.5	100	102	101.5	101	101	101	101	Not destroyed.	
26	102	101	101.3	101.8	102	102	101	101.5	" "	
27	101.5	101	101.9	102	103	103	102.5	103	Mediastinal affected.	
28	101.8	101	101.3	100	102.3	103.5	105.3	106	General tuberculosis.	
29	101.1	101.5	101.8	101	101.3	100.5	102.2	102.2	Not destroyed.	
30	101.8	100	101	101.5	103	103.8	101.5	99	" "	
31	101	101	100	101.8	103	102.8	101	101	" "	
32	101	100	101.3	101.8	105.3	104	104.5	105	Mediastinal and lungs affected.	
33	102	101.3	101	103.8	105.5	105.3	105	105.7	Mediastinal, lungs and liver affected.	
34	102	101	100	103.8	102	106.5	106	106	General tuberculosis.	
35	101	99.3	102.8	101	105.5	106	105.5	105	" "	
36	101.5	100	100	101	102	101	101	101.1	Not destroyed.	
37	102	100.8	100.5	101.8	101.5	101	100	101	" "	
38	101.8	101.3	101	102.3	101	101	101	101.5	" "	
39	101.5	101	102	102	101.5	100.5	101	101	" "	
40	101	102	101.2	100	100.5	100	100	100.5	" "	
41	102	101.3	100	102	101.3	102.5	104	104	Mediastinal and lungs affected.	
42	102.3	101	101.5	102	101.5	101.5	101	101	Not destroyed.	
43	102	101.5	101.5	101.5	102	102	101.2	101.5	" "	
44	102	101.5	101	102	102	102	102.3	102.5	" "	
45	102.5	101.3	101	100.5	103	105	105	105	Mediastinal affected.	
46	100	101	100.5	101	102	102.5	102.2	103.5	Not destroyed.	
47	101	101	101	102	101	102.8	102	103	" "	
48	102	101.3	102	102.5	105	106.5	106	105	Mediastinal and lungs affected.	
49	101	102	102.5	103	102.5	102	103.2	103.5	Not destroyed.	
50	101.3	101.5	101	101	101	101.3	103	103	" "	
51	101	102	101	102	102	100	102	102	" "	
52	101.8	100.5	102	102	102.5	101.5	102	102	" "	
53	102	102.6	101.5	101.5	102.3	103.6	104.5	105	Retropharyngeal, mediastinal and lungs affected.	
54	101.5	101.5	101	102	102	101.5	100.5	101		
55	101.8	101	101	101	102	103	104.2	104.2	Retropharyngeal, mediastinal affected.	
56	102	100	101	100.5	102.8	105	105	105.5	Mediastinal and lungs affected.	
57	101	101	101	100.5	101	102.5	105	105	Retropharyngeal, mediastinal and lungs affected.	

Messrs. Sears & Howell, of Orange Co., have a fine herd of Ayrshire cattle.

I was sent by State Board of Health to make a scientific test and examination of this herd.

The herd had been examined by three veterinarians, and passed as free from tuberculosis.

The owner not being satisfied with their decision, called Dr. Bachman, who informed them that tuberculosis existed in their herd.

The owner then applied to State Board of Health for an inspector.

The following is the report of test on these cattle:

No.	BEFORE INJECTION.		AFTER INJECTION.						
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M	
1	101.2	101.2	102.5	102	102.5	105	101.7	101.7	Pericardium, thoracic side, mesenteries, omentum, liver affected.
2	102.2	103	103.5	102	101.7	102	101.5	101	Not destroyed.
3	101.5	101.5	102	102	103.5	105	106	106	Mesenteries, lungs, liver affected.
4									Killed for test and no lesions found in any portion of the body.
5	101.2	100.7	101.2	101.7	102	101.5	101.5	101.5	General tuberculosis.
6	101.7	101.2	101	105.7	106	105.7	104.5	104.5	" "
7	101.5	101.5	101	102	104.7	104	102.5	101.7	" "
8	104.5	106.5	103.2	103	103.5	103.2	102	103	Pneumonia.
9	101.5	101.7	102.7	102.2	105	102.5	102.2	101.7	General tuberculosis.
10	101	100.2	101.7	103.7	104.5	104.7	103.7	103.5	" "
11	102	103.2	106.7	106.5	106.2	104.7	104.5	103	Mediastinal, mesenteries, lungs affected.
12	105.5	105.2	104	104	104	103.2	102.7	103	Mesenteries affected.
13	104	103.5	102	102.5	102.7	102.5	102	102.2	Not destroyed.
14	103	103.5	104	106.5	105.7	104	103.2	103	Mediastinal, lungs, spleen affected.
15	103	102	106.5	106.5	106	106	106	105.7	General tuberculosis.
16	101.7	101.5	102	101.7	101.5	101.7	101.2	101.2	Not destroyed.
17	102	101.5	101.5	106	106	105.7	107	106	Mediastinal, lungs and liver affected.
18	102	101.2	103.5	105.7	104.7	104.7	104.7	102.5	Mediastinal, thoracic side, liver affected.
19	102.5	101.2	105.5	106.5	106.7	105.5	104.7	103.5	" " " and lungs "
20	101	101.2	106.2	106.7	106	105.7	105	105.5	Thoracic side, lung affected.
21	101	102	104.7	106	106	105.7	104	104	Lungs, liver and spleen affected.
22	101.2	101.2	103.7	105.5	106.2	105.5	104.7	104	Cardiac, mesenteries, liver affected.
23	100	100	100.5	102	104.5	104	103.7	103	Pericardium, lungs, liver affected.
24	101.5	101.5	101.2	105	105	104.2	104	103	Mediastinal, lungs and liver affected.
25	101.5	101.2	102.5	103.7	103.7	103.5	104.7	102.7	Thoracic side, lungs and liver affected.
26	100.7	101.5	106	107.2	106.2	105.2	104.7	103.7	" " " " " "
27	100.7	101.5	101.7	102	102.7	104	103.7	102	General Tuberculosis.
28	103	103	103.5	107	106.2	105.2	103.5	103	" "
29	100.5	102	101.1	101.5	101.7	101.2	101.5	101	Not destroyed.
30	101	101	101	102	102	103.5	103.5	101.5	Thoracic side mesenteries, lungs affected.
31	102	101.2	100.7	102.5	102.5	102.5	102	102.5	Not destroyed.
32									Mediastinal, thoracic side, mesenteries and lungs affected.
33	103.2	102	104.7	106	105	105.7	104.2	104.5	General tuberculosis.
34	101.5	101	102	103.5	105.2	105	104.2	103.5	Not destroyed.
35	100.7	100.5	101	101.7	101.2	101.2	101.7	101.5	" "
36	101.7	101	101.2	102	102	102	101.5	101.7	General tuberculosis.
37	101.7	101	101.2	102	102	102	101.5	101.7	Not destroyed.
38	102	101.2	104.2	105.2	105.5	104	102.7	101.7	" "
39	102	102.5	100.5	101	100	101.5	101	100.5	General tuberculosis.
40	101.7	101.2	101.7	101.5	100.5	100.5	101.7	101.5	Not destroyed.
41	101.5	102	101.7	101.5	104.2	105	104.5	104	Mediastinal, lungs affected.
42	101.5	101.5	100.7	101	101.2	101.2	101.5	101.5	Not destroyed.
43	101.5	102.7	101.7	103.5	104	105.7	105	104.5	General tuberculosis.
44	101.5	101.5	100	101.5	104	105	105	105	Mediastinal, mesenteries, liver affected.
45	101.2	101.5	101.7	104	105	103	105	105	Mediastinal, lungs, liver affected.
46									Mediastinal, thoracic side, omentum af- fected.
	101.7	101.5	103	106	105.7	106	105.7	105.2	Mediastinal, mesenteries, lungs, liver affected
	101.5	101.5	101.7	103.5	107	105.5	105.5	105	Not destroyed.
	101	102	101.2	101.5	101.2	102.7	102	101.7	Mediastinal, mesenteries, omentum affected
	101.2	101	101	103	107	106	106	105	

No.	BEFORE INJECTION.		AFTER INJECTION.							
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M		
47	101	101.7	101	102	103	105.5	104.5	104	Mediastinal, thoracic side, lungs affected. Not destroyed.	
48	101.2	101	100.7	100.7	101.5	99.7	101	101		
49	101.5	101.5	103	104.7	105	105.2	104	103.5	Mediastinal, thoracic side, luugs affected. Not destroyed.	
50	102	102	101	101	101.2	101	101.2	101		
51									Mediastinal, thoracic side, omentum, liver affected.	
	102	101.7	102.7	104	105.5	106.7	105.5	105		
52	101.5	102.7	102.2	102	103	103	103.7	103.2	Not destroyed.	
53	102	102	100.7	101.2	101.7	101.7	101.2	101.2		
54	101.7	102.2	101	101	102.7	102	102.7	102	" "	
55	102.2	103.7	106	106.5	105	105	105	105		
56	101	103.2	100.2	103.5	105	105.5	105	105	General tuberculosis.	
57	102.5	103	100.5	102.2	104.2	105.2	104	103.2		
58	101.2	101.7	101	103.2	100.2	101.2	101.5	101.2	Thoracic side, omentum, lungs affected. Not destroyed.	
59	102	104	101.2	101	101.2	101	101.5	101.7		
60	103.2	104	102.5	103	101	101.7	101	101.5	Lobular pneumonia.	
61	102.5	104	102.5	101.7	100	101	100.5	101		
62	102	102.7	103.7	102.7	102.5	100.7	100.7	101	Retropharyngeal affected.	
63	102.5	102	104	102	102	102.2	102	102.2		
64	102	103.2	101	104.7	105.2	105	105	105	" mediastinal, lungs affected	
65	101.5	101.7	106	102.2	101.2	101.5	101	101.5		
66	101.7	101.7	101.2	106	105	105.5	105	105	General tuberculosis.	
									" "	
									Lungs and liver affected.	

Remarks.—The post-mortems were held in the presence of Drs. Dubois & Son. Dr. Bachman and a large number of taxpayers were well satisfied with the action of tuberculin, and expressed a wish that tuberculosis be stamped out of this state.

Hon. Levi P. Morton has the finest herd of Guernsey cattle I ever saw; they were all in what herdsmen call "show condition."

I was requested by Mr. Cottrell to examine the herd. On physical examination I found three suspicious cases. I tested these three with tuberculin; one reacted and was killed. Post-mortem showed lesions of tuberculosis.

I was then requested to test the whole herd, with the following report:

No.	BEFORE INJECTION.		AFTER INJECTION.						
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M	
1	102.6	103	102.4	105.5	105.5	104.5	105.4	104.8	Mediastinal, lungs and liver affected. Thoracic, lungs and spleen affected.
2	102	102	103	105	106.2	106.3	106.4	106	
3	102.7	102	101.8	101.6	102	101	101	102	Not destroyed.
4	102.4	102.8	102	105.6	106	106.6	105.8	106.2	Mediastinal, lungs, liver affected.
5	102	102.6	102.2	102	101.8	101.6	102	101.5	Not destroyed.
6	102.2	102.6	102.2	102.4	101.8	101.4	101.6	101.8	" "
7	102.3	102.8	102.8	101.1	102.5	101.8	102	101.6	" "

No.	BEFORE INJECTION.		AFTER INJECTION.						
	5 P M	10 P M	5 A M	7 A M	9 A M	11 A M	1 P M	3 P M	
8	102	102.2	101.7	101.2	102.6	102	102.6	102	Not destroyed.
9									Mediastinal, thoracic side, and lungs af-
	102.4	103	102	105.5	107	107.8	101.6	106.2	ected.
10	103	103	103	103.8	105.6	105	105.2	105	Mediastinal, cardiac, lungs, liver affected.
11									5 P M } Mediastinal, lungs, liver, spleen af-
	102.2	102.4	101.4	101.4	101	102	102.6	103.5	105.3 } fected.
12	101.8	101.4	101.4	102.6	102.5	105	106.2	106.5	Mediastinal, lungs affected.
13	102	102.8	101.8	102	101.8	101.8	103.6	101.2	Not destroyed.
14	102.8	102	102.2	101.8	101.9	102.8	102.2	101.8	" "
15	102.2	102.4	101.8	101.8	100.5	102	101.8	102.7	" "
16	102.5	102.2	102	102.4	101.5	101.6	102.9	101.2	" "
17	102.8	103	103	104	103.5	105.2	105.4	106	Thoracic side, lungs and liver, affected..
18	102.2	102.8	102.8	102.4	102.6	102.4	102.3	101.9	Not destroyed.
19	102.6	102.8	101	105.1	106.8	106	106.2	105.8	Lungs, liver, spleen affected.
20	102.4	102.6	102.8	101.4	102	102.5	102.4	102	Not destroyed.
21	102	103	101.8	101.8	102	102.4	102.5	101.8	" "
22	101	102	101.6	101.8	100.5	101.2	101	101	" "
23	102.8	102.6	101.8	102.1	102.2	105	102.2	102.4	" "
24	103	103.8	102	102.4	101.5	102.2	102.2	101.8	" "
25	102.4	101.6	101.4	104.5	105.8	105.7	105	105	Mediastinal and liver affected.
26	101.6	101.8	102.4	101.6	101.6	101.3	101.9	102	Not destroyed.
27	102	101.8	101.4	101.5	101.5	101.7	102.5	101.8	" "
28	101.8	102	102	102.6	102.5	105.6	106.3	105.5	General tuberculosis.
29	101.6	102	102.2	102	101.6	101.6	101.8	102	Not destroyed.
30	102	101.8	101.8	101.5	102.2	103.8	106.8	105.6	Mediastinal and liver affected.
31	101.6	102	101.8	101.3	101.6	101.2	101	101	Not destroyed.
32	101.6	103	102	102.4	102	101.6	102.5	102	" "
33									Mediastinal, omentum, lungs and liver
	102	103	103	105	105.5	106	105.6	105	affected.
34	101.8	102	102	102	101.2	100.4	100.8	101.2	Not destroyed.
35	101.6	102.2	101.8	102.1	101	100.8	102	101	" "
36	101.4	102	102.5	102.5	101.8	101.5	101.1	101.8	" "
37	102.1	101.4	101.8	101.8	102	100.8	101	100.8	" "
38	101.6	101.5	101.3	101.5	101.6	100.8	101.6	101.5	" "
39	103	102	101.8	101.9	101.8	101.4	101.6	102.4	" "
40	102	101.9	101.5	102.5	106.2	106.4	105.4	104	Mediastinal, lungs affected.
41	101.7	102	101.4	100.5	101.9	101.4	102.1	101.5	Not destroyed.
42	101.6	101.2	100.5	100.4	101.6	101.9	101.8	101.4	" "
43									Retropharyngeal, mediastinal, liver and
	102.1	102	101.8	102.5	104.2	106.2	106.8	105.8	spleen affected.
44	101.2	101.4	100.8	102.4	101	101.9	101.5	101.5	Not destroyed.
45	101.6	101.9	101.5	101.5	101.4	102.1	103	104.8	General tuberculosis.
46	101.2	102	101.2	101.6	101	101.1	101.5	101.6	Not destroyed.
47	101.7	101.6	101.4	101.2	101	101	102	101.5	" "
48	102	101.5	101.5	101.5	101.8	102	102.1	104.2	5 P M } Mediastinal, liver affected.
49	101.6	102.5	100.8	100.5	100	101	101.5	101.8.	105 } Not destroyed.
50	101.5	100.8	104	106	106.5	106.5	106.5	105.2	Lungs affected.
51									Killed for test but no lesions of tubercu-
	101.4	101.8	101	101	101.8	101.4	101.1	101.8	losis found.
52	101.7	101.4	101.2	101.3	101	101.9	101.8	102	Not destroyed.
53	101.1	102	101.2	101	101.4	101.4	101.7	100.2	" "
54	101.4	101.6	101.2	100.2	100.6	101.8	101.4	101.6	" "
55	102.3	102.6	102.5	101.8	100.6	101.6	102	101	" "
56	102.7	102.1	102.5	102.8	101.8	101.5	101.8	101.8	" "
57	102	101.5	102.6	101.9	101.5	102.1	102	101.7	" "
58	101.8	102	102	101.8	101	102	101.5	101.5	" "
59	101.5	101.3	101.9	101.5	101.5	101.4	101.8	101.5	" "
60	102	102.5	102.4	101.8	101.8	101.9	101.9	102.2	" "

Remarks.—There was one heifer which, on physical examination, showed marked symptoms of tuberculosis; so diagnosed by three veterinarians. This heifer was tested twice, but showed no reaction, and on post-mortem no lesions of tuberculosis were found.

There was a general doubt in the test of tuberculin in this herd on account of their fine condition.

The post-mortems were witnessed by Dr. Gardner, Veterinarian of Guernsey Cattle Club; Mr. Norris, Secretary of Guernsey Cattle Club; Mr. E. N. Howell, of Poughkeepsie; Mr. Eddie, of Saratoga; Dr. Heinie, of Kingston and Dr. Traver, of Rhinebeck.

I was assisted in these post-mortems by my son, Dr. Otto Faust.

This test was a great victory for tuberculin; every cow that reacted showed marked lesions of tuberculosis.

CASTRATION.

BY W. E. B. MILLER, D. V. S.

A paper read before the Pennsylvania State Veterinary Medical Association.

(Continued from Page 91.)

Many operators claim to have operated on ridglings, and lead the owner to think so, when as a matter of fact, they have not operated on a ridgling at all, but simply upon what might be termed, *a close colt*, which any ordinary operator might have altered if he so desired. It was such as this class of animals that Dr. T. B. Rogers referred to in his paper read at the last meeting of this association, when he stated that he "solved the cypher and brought forth the little mouse, etc." He must have *found two ridglings* however, for he admits that he twice failed, "utterly failed, to accomplish his purpose, even though he explored the whole inguinal space," his hand must have been *like the "ham"* he wrote of, and he should have gotten some "*quack*" *from the mountains* to have finished the job for him. A ridgling is a much more difficult animal to castrate than a close colt, and the operator has to be possessed of a knowledge of the anatomy of the parts, or have had much practical experience in

the operation before he can successfully perform it. After properly securing the victim, open the scrotum as in ordinary operations; separate all the membranes until the opening to the inguinal canal is reached, then oil your hand with "olive oil," or saturate it with a solution of bi-chloride of mercury and oil, and insert the hand within the scrotum; press upward through the canal until the hand reaches the internal inguinal ring; if this ring is not occluded entirely, as it generally is, and is sufficiently large to admit one or two fingers of the hand, you may be enabled to perform the operation without further manipulation; if however, you cannot do this, you will have more difficulty in securing the coveted prize. It will not do to break down or rupture the circular muscle of the internal ring, as it endangers and nearly always is followed by the entrance of the small intestine within the inguinal space, and a subsequent hernia may result. You must, however, separate the muscular fibres longitudinally, as they diverge from the ring until you can insert your fingers within the abdominal cavity, then pass the fingers above and across the opening of the ring and grasp the gubernaculum testes, make gentle traction upon it and draw it up to the opening and into the inguinal canal, whence it can be readily brought down to the scrotal opening and removed. As soon as it is separated, allow the cord to retract into the canal to help fill up the space, and assist in preventing the intestines from coming into and down the canal. Cleanse the wound with a solution of bi-chloride of mercury or some other good antiseptic and let the patient rise. It is best to keep him quiet during the balance of the day on which you operate, after which he should have regular exercise.

I have thus passed over, in a general way, most of the different modes of operating, and the principal complications attending the same.

I will now say a word relative to the performance of the operation with the animal in an upright position. When I first learned to castrate stock, I followed the example and teaching of my father, who did all that kind of work in his vicinity for fun

and glory. I do not think he ever received a dollar in money for it, but he had lots of glory and some fun.

After I became old enough and had gathered considerable experience, I thought I knew enough to work for pay. At that time we used the English hobbles, and cast every animal we operated upon. My only knowledge was that of any other young country castrator, and I frequently encountered serious and fatal complications. Broken limbs, broken ribs, broken backs, spavins, cubs and bruises from throwing the animal and tying him down were of common occurrence, and I always felt (as I do yet) a sigh of relief pass over me when an animal I had thrown got up and stood upon his feet again. I was glad to learn anything new, and new methods or new kinds of instruments that I considered were superior to those I had employed, I always accepted and used thereafter. During the closing years of the late war I was located in the Southwest, and often in conversation with citizens or soldiers of that locality, I would talk "horse" with them, as the saying is. I frequently heard horsemen of that section talk of castrating stallions and colts without throwing them. I thought they were either crazy or fools, or thought everybody else was. I was too sceptical to think it possible for an animal to stand still and allow so painful an operation to be performed on him without kicking the operator's brains out, if he had any.

When, however, a little later, I saw an old man of nearly sixty years of age, in a little over a half day, apparently with ease, castrate between sixty and one hundred wild Texan ponies that had been raised upon a ranche and never handled (when it certainly would have required several days to have caught and cast the same number), and not one of the ponies, as far as I could see, made even an attempt to kick. I came to the conclusion I was the fool, and not the Texan. Not a rope or hobble of any kind was upon any of them.

The animals were corralled in large pens, and driven thence into close stocks and confined therein by sliding bars, over and under their necks, this of course held them, and it was impossi-

ble for them to escape punishment until they were released. The method employed was the actual cautery by most all of the operators in that section.

Both fillies and colts were run through the stocks, and all were branded with the owner's brand, and the *colts* castrated; all would then be turned out at large on the ranche with no after treatment, or perhaps scarcely a thought of them again until the next rounding up season came around.

When a stallion was in the stocks, the men with a branding iron would work on one side, while at the same time the castrator, with his cautery or clamps (whichever method he used) worked upon the other, and between the two the poor colt would not know which to try to get away from, even if it were possible.

Sometimes the animal would drop down and half hang himself before the operation was half completed, but the operators would go right on with their work just the same, with the animal hanging by the neck until the operation was completed. I remember of seeing one or two break their necks in struggling to get away, but as a rule they would all scamper off as fast as possible when the bars were loosened.

I often asked to be allowed to experiment, and soon found that I could easily perform the operation, and that it was just as readily done, or even more so, than any other, and I soon learned to like it better.

Later on in 1869, I returned to the East to New Jersey, and when I informed my father and others that I was castrating stallions standing, they regarded me very much in the same light that I did the Texan a few years before.

I told them the proof of the assertion was in demonstrating it as a fact, in order to do so, however, I was compelled to purchase (or agree to pay) for an old ten dollar stallion to become a martyr to science. No one who owned a good horse was willing to let me experiment on their stock (as they said).

The operation, with the animal standing, is, in my opinion,

the safest, most rapid, and the easiest performed of any, and can be accomplished under ordinary circumstances with less assistance than any other, and in less time.

My method is to place the stallion in a large box-stall, put a blind bridle on his head, covering his eyes so he can not see your movements. If you have plenty of help untie him and place a twist upon his nose; have a good sensible man, that does not expect to be killed at once, to take hold of the twist and stand a short distance from his head, placing his left hand against the side of the colt's neck, so as to keep him off from the man, then place the animal alongside of the partition, so that he can steady himself against it, and if possible have him backed up to a corner of the stall, so he will not be able to go backward, which he will always attempt to do when his testes are cut into and drawn out.

Now give your instruments to an assistant, if you have one along, if not, put them in your pocket so as to be easily accessible, and place your hand on the animal's side to attract his attention, and let him know that you are there. Then pass your hand rapidly down over his flank and around into the inguinal region, if he flinches or seems to be excited, keep your hand there and speak to him, patting him with the other hand, as soon as he is quiet grasp the testicles nearest you, between the thumb and forefinger, and take from your assistant your knife or bistoury, and make a full and long incision from forward, backward between the thumb and finger; repeat this part of the operation on the other testicle, then remove in the manner heretofore described, with the compress and ecraseur or wooden clamps.

I have already stated that I believed the operation standing to be the safest, and I *assert that it is* the most desirable of any or all methods, and Dr. Rogers opinion to the contrary.

It is good surgery and scientific.

It is safest, because you take no risk in injuring the animal by casting him. You do not have to use undue traction upon

the cord, and Dr. Rogers knows better when he states that "you do." On the contrary, the weight of the testicle itself will draw the cord sufficiently low, if it has any size whatever, after it is released from its envelopes or attachment. Where the horse is down this cannot be the case, for the very position he occupies is that of constraint (cramped up) and naturally forces him to draw up the testicle into the canal.

If however it were necessary to use traction, there would be less resistance against it on the part of the animal.

There is not half the danger of champignon or scirrhus cords, they are in fact impossible, unless the operator is careless and either purposely or accidentally cuts the cord too long or neglects to push it up into the wound, when it fails to retract. I cannot call to mind a single case in my own practice, when I exercised due care, or when there was no complication, where I have had scirrhus cord for several years past, while I am frequently called upon to operate on such cases that were castrated by others.

(I have operated on three within the last twelve months, that the owners informed me were castrated by the gentleman who with all of his "scientific knowledge," "good surgery," non "sleight of hand performances," "Rohard's methods," etc., seems to be no more successful than the "old quack," whose methods "we as professional gentlemen are not to follow.") In fact I can conceive of but one single objection, namely: hernia, that can be urged against the method, and that alone is slight in comparison to the benefits and advantages it possesses, when you take into consideration that but one colt out of every fifty, on an average, is ruptured, and that in most cases can be readily diagnosed, it would seem to be idle folly to take the risk and the labor required with the other forty-nine in casting them.

In his over-zealous desire to "elevate" the profession, the learned surgeon, scientist, and professional reformer seems to have forgotten that only a very few years ago he might have been found almost every day during the castrating season driving with an old castrator ("a noted quack,") from farm to farm

through a certain section of New Jersey, castrating colts at any price, from fifty cents up, as high as they could get, and I am not sure that he has raised the price any now, that he is doing nothing but "purely scientific professional work." He also seems to have forgotten the fact that he recently advertised and put on the market special medicines for pink-eye, etc., for which he ceased to be a member of at least one veterinary society. He appears also to be unmindful that during the Gloucester racing régime, he sought for and performed numerous "neurotomies," claiming as an inducement, that he did not throw the horse, thus avoiding a serious risk. If it is professional and scientific to perform a "neurotomy standing," is it any the less so to perform castration standing?

In the former you are in danger of cutting off either or both the vein or artery, as I saw the scientific Dr. himself do while operating on one standing last summer. In castration standing you could scarcely cut a vein or artery of any importance whatever if you tried to.

To sum up in a few words, I would again assert that castration standing is good surgery. It is purely scientific. It is strictly professional. It is easy of accomplishment. It is more safe than any other method. It is highly successful. It is no sleight-of-hand operation. It is preferred by horse owners who value the lives of their stock, above any other method, otherwise they would not send long distances and employ men who operate in that manner and pay extra for it, when they could secure the services of as equally competent men in their own immediate vicinity perhaps, but who would throw the horse or colt to perform the operation. A few words now as to the after treatment of your patient, and I will then pass on to the statistics. If possible keep your patient quiet for at least a day, after which give him regular, moderate exercise, this is very essential, as it helps to keep down the swelling. Give the animal soft food, bran mash, or vegetables, as often as necessary, or if possible, "grass him," or let him run where he can get it. Keep the wounds open and clean for the first week at least,

using any good antiseptic for injection into the wound. Creoline, bi-chloride of mercury, carbolic acid, etc., these are all good.

Treat the animal as you would any convalescent, and recovery is generally assured. It has been my custom to keep a record of all the colts and stallions I castrated. Owing to the loss of some of my books, the record from 1865 to 1868 is incomplete, also from 1878 to 1882 inclusive, but from 1868 to 1877 inclusive, and from 1883 to 1893 inclusive, I have a perfectly accurate and complete record in full. In order to show the rate of mortality following the operations, by the two principal methods employed, and the causes of death, I have compiled the following table from my record kept each year, embracing the lists of stallions and colts only, and does not therefore include any other class of animals whatever. For the first eight years, from 1868 to 1875 inclusive, I used the wooden clamps altogether, excepting in perhaps about a dozen cases, wherein the owner preferred the actual cautery. In 1876 I used the ecraseur in about one-third of the operations, the wooden clamp in the other two-thirds.

In 1877 the order was reversed, and the ecraseur was used in the majority of the cases. From this time on I used the ecraseur in connection with the House clamp.

In the period embraced in the first decade, I castrated eleven hundred and forty-four (1144) stallions, nearly all of which were operated on during the late spring and summer months; one or two exceptions are worthy of note however; the first occurred December 28th, 1871, when I operated on a thirteen-year-old thoroughbred stallion owned by Mr. Lemuel Buckalew, of Jamesburg, N. J. The day being the coldest of the year, and so cold that the blood from the wounds froze in icicles as the clamps were being put on the cords.

The second was on February 24th, 1873, when I castrated a five-year-old stallion for Mr. Richard Severns, of South River, N. J., when the same condition of affairs occurred, the thermometer registered four degrees below zero at 6 A.M.

In both cases the patients did well and made rapid recovery, refuting the old foggy notion that the operation could not be safely performed in cold weather.

The record of each year is as follows :

In 1868 I operated on	69	stallions	3	of which died.
" 1869 " " "	87	"	2	" " "
" 1870 " " "	102	"	1	" " "
" 1871 " " "	94	"	3	" " "
" 1872 " " "	100	"	none.	
" 1873 " " "	133	"	1	of which died.
" 1874 " " "	84	"	2	" " "
" 1875 " " "	120	"	2	" " "
" 1876 " " "	173	"	2	" " "
" 1877 " " "	182	"	3	" " "
Total :	1144	stallions	19	ratio about $1\frac{3}{4}\%$

Of this number there were ruptured 12 at the time of operation, aged as follows: Weanlings 3, one-year-old 2, two-year-olds, three-year-olds 1, four-year-olds 2, five-year-olds 1. Total 12. In the majority of the cases the hernia was diagnosed prior to the operation, and the animal cast and operated on; with this fact in mind and all due care and attendance given the cases. In one or two others the discovery was not made until after the operation had been performed and the patients returned to their stalls. In one case, that of the five-year-old horse, the discovery was not made for some time afterward, while I was in the owner's house eating my dinner, the information coming to me from the owner's son, who was watching the horse, to see that he did not pull off the clamps while the caustic placed therein was irritating the cords. When I reached the stable the intestine was hanging down half way to the hocks. The animal was at once cast and after considerable difficulty the hernia reduced. This animal made a fairly rapid recovery. In the others from which the intestines protruded, the animals all died of peritonitis after reduction, or had to be destroyed because reduction and the replacing of the intestines within the abdominal cavity could not be accomplished. The causes of death in the 19 cases were recorded as follows: Tetanus or lock-jaw 9, peritonitis 6 (in three of these the ani-

mals were ruptured and operated on by the covered method), lung fever from cold contracted at the time of operation 1, hernia (animals destroyed because of it) 2, unknown 1. You will observe, therefore, that the cause of death in nearly 50% of the cases was from tetanus, while peritonitis caused nearly 30%.

Following the operation with the clamps, the condition of schirrhosis cord was very common, and during the first few years of practice by this method, I had frequently to reoperate on my own cases. Another complication that is frequently met with is the adhesion of the testicle to the covering membranes, even to the scrotum itself, and it often renders the operation quite difficult to perform.

The second period of history is the period of eleven years, from the 1st of January, 1883, to the 31st day of December, 1893, inclusive. During this time I have operated almost entirely with the House clamp and the ecraseur, using the wooden clamp only when I diagnosed or knew of the presence of a hernia. I would then employ them in the covered operation occasionally. I have used other instruments on trial or for experiment only, but for general use the first mentioned only. During this period I have castrated 1416 stallions of all ages, from three hours to twenty-two years old, at all seasons of the year, from January 1st to December 31st, and in all kinds of weather, regardless of the "farmer's sign," right or wrong.

In 1883	I operated on	178—9	of them	ridglings.	1 died ridgling.
" 1884	"	" 145—4	"	"	none.
" 1885	"	" 116—6	"	"	4 died ridgling.
" 1886	"	" 148—4	"	"	3 " "
" 1887	"	" 150—5	"	"	none.
" 1888	"	" 138—8	"	"	4 died ridgling.
" 1889	"	" 111—7	"	"	1 " "
" 1890	"	" 96—6	"	"	4 " "
" 1891	"	" 82—3	"	"	1 " "
" 1892	"	" 101—2	"	"	none.
" 1893	"	" 151—12	"	"	3 died ridgling.
Total :					21

(To be Continued.)

TYPHOID FEVER; OR, CONTAGIOUS INFLUENZA IN THE HORSE.

BY PROF. W. L. ZUILL, M.D., D.V.S.

(Continued from page 101)

TREATMENT.—Drugs of every description have been used in the treatment of this disease, and often without method or judgment. The random administration of drugs usually being more productive of harm than good, and not infrequently is the pharmaceutical combination such, that the drugs counteract each other, and produce incompatibles. Exhaustion of the system is most effectually produced by the simultaneous administration of drugs, which exert an opposite therapeutic influence. There are but few articles written on this subject, that do not contain the wildest inconsistent theories, with regard to the remedies advised. Almost every practitioner pretends to have a specific for this disease, as indeed for all others that are difficult to treat, and which, when tried, are found to be of little value. We will not take into consideration anything that has been written or advised on this subject, but by bearing in mind certain well-known clinical facts, will by deductive reasoning try to reach what we believe to be reasonable conclusions in the treatment of this disease.

The medical treatment of this condition, must entirely depend upon the symptomatology which the disease presents, that is to say that drugs must be administered to counteract the dangerous symptoms as they arise. The means used to reach this result must necessarily be as varied, as are the symptoms, and complications with which we must contend; therefore there is no systematic treatment for influenza, or typhoid ever in the horse. There are, however, general indications which are suitable to all cases, especially when the treatment begins with the first symptom.

It is these general measures to which M. Trasbot had called special attention in 1883, at a meeting of the Central Society of Veterinary Surgery.

There are two facts to be remembered in the treatment, the first of which is, that there is, from the very beginning all the general phenomena of an intense febrile condition, and secondly a marked tendency to congestion of the most vascular organs, with blood stasis. Given these facts we naturally ask, how are we to counteract these conditions most effectually and quickly? Notwithstanding everything that may be said to the contrary, the first indication is to bleed. The great benefits to be derived from bleeding were very clearly demonstrated by M. Trasbot in what he intended to be a series of experiments, finding no serious results from small bleeding, the quantity of blood taken was gradually increased until as much as 6 or 7 litres were withdrawn from plethoric animals. This treatment instead of killing the animals as was contended *a priori* produced an instant relief. The great advantage of this treatment, was the immediate improvement of the most dangerous symptoms, the emission of blood being always followed by improvement.

During the last few years I have had many opportunities to thoroughly test the value of this treatment, and in not a single instance have I had occasion to regret it, many of the cases so treated, requiring no other treatment.

Objection to venesection undoubtedly arose from the fact that earlier investigators erroneously supposed that this was allied to charbon or septiceæmia, in which diseases bleeding is contra-indicated. Bleeding in the early stages of influenza or typhoid fever in the horse, was first brought to my notice through the writings of Prof. Trasbot of Alfort, and so thoroughly satisfied am I of its great value when used promptly and fearlessly, that I do not feel as if an apology was necessary for this repetition.

The practice of bleeding cannot do harm, and is not objectionable in any respect, but yet there are practitioners who will learnedly argue against it, without having tried its effects in a single instance. When pulmonary congestion is threatened, bleeding is absolutely necessary, and *free bleeding* in these cases is the only thing that will abort that complication, which

sooner or later must terminate in death. M. Trasbot recommends that the blood be drawn by making several small bleedings in the 24 hours, rather than one single bleeding, as it tends to remove a less quantity of corpuscles while taking the same quantity of liquid. This plan I have never tried, having always felt better satisfied to take at one bleeding from a good sized plethoric horse from 6 to 8 quarts of blood.

Counter-irritation in the shape of mustard or turpentine, applied to the skin of the extremities and belly, has been strongly endorsed by some writers, and from a theoretical standpoint, based upon the changes found upon post-mortem examination, it cannot do other than good. My own experience with it, however, is quite well, having always found that free bleeding fulfilled every indication.

When used, however, mustard is probably the best, as its action is more energetic and forcible than turpentine. Counter-irritation will no doubt greatly lessen the gravity of severe complications that may have a fatal termination—especially those of the nerve centres, and of the lungs—by causing the serous transudation to occur in the subcutaneous connective tissue, where it would be harmless, rather than in organs where it would be incompatible with life. It would certainly be of great value in cases that are not bled, and when it is associated with drugs which would powerfully influence the circulation. Turpentine, when used too freely, may cause serious complications by cutaneous irritation, especially of the thinner portions of the skin. This objection also applies to mustard which may cause cutaneous sloughs requiring a very long time to heal.

In addition to counter-irritation, drugs which act powerfully upon the heart and blood-vessels, thus influencing the circulation to a marked degree, will be of great value in the first stages of the disease. Veratrum and aconite best fulfill these indications during the first 48 hours, given frequently in small doses, and carefully watching the patient for the effects of the drug, which is capable of doing great harm if not used intelligently.

When the practitioner has seen his case early, and has made

a free bleeding, the indication then is to put the patient on an antipyretic treatment. There are agents—drugs if they may be so called (?) which combat fever by what is called a contra-stimulant action, but which I think can be better described as denutritive antipyretics, or antithermics, decrease the over active combustion of the body; they have been divided into two classes, those which lessen combustion by primary action upon the blood itself preventing molecular interchange, and those acting through the nervous system, and reducing fever by a secondary phenomena, which restores the tone of the capillary vessels, and consequently facilitates circulation in certain organs, thereby preventing stagnation and congestion.

“As a general rule, such antipyretics as are obtained from the mineral kingdom, may be classed as ‘denutritive,’ acting by their presence in the blood, and retarding molecular interchange between the blood globules and the tissue structures.”* Salts of mercury, arsenic and iodine act in this way in arresting molecular interchange, and are especially denutritive. Iodine and its compounds act especially upon the mucous tissues and the lymphatic ganglions; when given to an animal in full doses it will be seen that the temperature drops below normal circulation and respiration are diminished in force and frequency; the pulse becomes slow, and the visible mucous membranes blanched, and if the drug is pushed beyond this point anæmia soon follows.

Alkaline salts act in the same way. Bicarbonate of soda in small doses seems to increase the appetite, but in large doses it reduces temperature, bleaches the mucous membrane, and produces emaciation.

In typhoid fever or influenza in the horse, these remedies may be of some value, if given early. In giving iodide of potassium and bicarbonate of soda, even before there is localization fever—the result of too active molecular interchange—is counteracted, and the temperature, already reduced by the bleeding,

*Trasbot.

will be kept more nearly the normal level. There is, therefore, some advantage to be gained by using these drugs.

Among other drugs, sometimes of value in this disease, we find digitalis. It is of value in those cases when there is a marked and exaggerated action of the heart; it counteracts those influences which produce this condition, and stimulates those nerves which control or inhibit the over activity of this organ. In this way digitalis tends to counteract the flow of blood to points when there is a tendency to stagnation, and may therefore be useful, and in many cases indicated.

Quinine, one of the most valuable remedies in this disease, reduces temperature, and appears to act by stimulation of the ganglionic nervous system. Quinine appears to give much better results when it is combined with acetanilid, and given in 30 grain doses each, four or five times a day. In this combination they seem to exert a much greater influence upon the pyrexia than either alone; it appears as if the therapeutic action of one drug aided and influenced the action of the other, or that the effect of each upon the system was what was required in order that the action of the others may reach its full capacity. Stimulation will often be urgently required, strong infusions of coffee with a little good whiskey, will give the happiest results in these cases. From 16 to 32 ounces of infusion, one ounce of coffee to two ounces of finished product, with from two to four ounces of spiritus furmenti every 24 hours, will often give marvelous results, especially if associated with from 30 to 60 M doses of the tincture of nux vomica.

I know that this suggestion to use nux vomica in high fevers is likely to meet with considerable criticism, and that some will even hold up their hands in therapeutic horror, but this will only be from those who have never tried it.

From a review of the indications for the general treatment of this disease, it will be seen that bleeding should be immediately performed before any localization occurs. If we are liberal, and at the same time judicious, in this respect only the best results can follow, the fever is counteracted, temperature lowered,

and congestion prevented. This *may* be followed by counter-irritation with mustard to the chest, belly and extremities, as it will probably tend to prevent localization upon important viscera, and to establish it in the subcutaneous connective tissue. This must be followed by antipyretic remedies, such as quinine, acetanelid, salts of iodine, arsenic and mercury, bicarbonate of soda, etc. Iodide of potassium, when used, should be given in half ounce doses three times a day; it is expensive, but is by far the best of these salts. Bicarbonate of soda is cheap, and may be used to advantage in some of these cases. When there is a tendency to blood stasis, digitalis given in small doses frequently, for a day or two, will often do much good. Quinine and acetanelid become our sheet anchor, in the majority of these cases, especially when intelligently aided by drugs to meet special conditions, and judiciously supplemented by the use of such stimulants as coffee and alcohol.

TREATMENT OF LOCAL COMPLICATIONS.—The treatment of the localizations must be adapted to the different conditions as they arise, so that each new phenomenon will have to be combated by new and special treatment, in other words medicine must be given entirely to counteract symptoms.

Intestinal complications will be seen in the majority of cases, and is the least serious form with which we have to contend. It is first indicated to restore the normal tone of the digestive mucous membrane; this should be done with as little irritation as possible, and is best accomplished by the administration of small doses of sulphate of soda.

There are cases when abdominal pains and dull colics are present; these are probably best combated by the use of such anodines as camphor and chloral or asafœtida given in doses of from 2 to 3 3 each. It is not by any means infrequent to find cases of muco-albuminous diarrhœa due to the presence of irritating food masses. The first indication in treatment is to remove the cause by the administration of from 20 to 30 ounces of castor oil, containing one drachm of carbolic acid or iodine, and to continue the administration of these drugs in 10 or 15

grain doses three times daily for a few days. A very popular method of counteracting this condition is by the use of vegetable or mineral astringents. The effects produced by these medicaments is but temporary, it is a delusion, and the results looked for are not obtained. The anodine treatment will often give excellent results in these cases, stopping the diarrhœa in two or three days. Preparations containing opium should be given with extreme caution, and when used at all should be in small doses and freely diluted with water. By the use of opium we may produce that complication which we most fear, that is cerebral congestion; as we all know how frequently this occurs in the use of this drug, and especially in a disease when there is a tendency to this complication. Sometimes a loss of appetite is very persistent, even after all other symptoms have passed away, this is due to a lack of tone in the digestive mucous tract, and should be treated in a way calculated to restore this lost function, bitter tonics, stomachics and stimulants best fulfill this indication. When the localization is upon the respiratory organs or pleura, the treatment must be modified to suit the complication.

As soon as the lung lesion is manifest, it should be treated as an ordinary inflammatory disease. We have already resorted to bleeding and counter-irritation, this is now to be followed by ordinary treatment, good nursing, carefully watching for unfavorable complications in order to counteract them, *and as carefully avoiding too much curative treatment.* Alcohol and turpentine has been highly recommended in this complication, but it is far more likely to do harm than good; except in the latter stages when benefit may be derived from its use if given in small and frequent doses. Alcohol, when given too freely, produces results the very opposite of stimulation, tending to produce blood stasis rather than to prevent it; its use in this way is therefore irrational. Turpentine, when used in small doses during the convalescing stage, may exert a certain beneficial effect upon the respiratory mucous membrane, but has decided disadvantages if used at any other time, owing to the irritating

effects which may follow its use. The pulse in this complication should be closely watched, as there is frequently an indication for the use of digitalis, which may be given in from 30 to 50 M doses of the fluid extract. The effect of the drug must be carefully noted, and if the pulsations become slow or intermittent, the drug must be stopped. Over active treatment in this complication is to be avoided, as the very great majority of cases will get well in a week or ten days if the patient is not killed with medicine. Bronchial irritation, marked weakness, and poor appetite, often remain for a long time, after all other symptoms have disappeared; diffusive stimulants, tonics and nutritious foods and drinks fulfill all the indications in this case.

If the disease concentrates itself upon the nervous system, and does not yield to the general treatment already indicated, death almost invariably occurs. If founder is the complication, the ordinary course of treatment for this disease is to be followed, but not infrequently it will require several months for its complete recovery.

In those cases when gangrene of the lungs is a complication, it should be treated in a manner indicated by this condition, such as stimulants and antiseptics; but whatever the treatment, death will be the invariable termination. A large number of cases of this complication has been brought to my attention, and I have yet to see the first recovery, nor have I been able to find any recorded cases and gangrenous sloughs on the surface, whether primary or secondary, can often be successfully treated, and a general infection prevented. The treatment indicated in these cases is such as applies to all sloughing wounds.

In those cases of plastic and hæmorrhagic iritis, which is sometimes in the convalescing stages of this disease; very hot local fermentation is indicated, this combined with *Donovan's solution*, liquor arsenic et hydragri iodum, will give the best results. This preparation should be given in 60 M doses three times daily, and gradually increase to one ounce daily; in from 18 to 25 days; complete absorption of the transudate or hæmorrhage will have taken place.

HYGIENIC MEASURES.—There can be no question as to the contagious character of this disease, and it is, therefore, necessary to isolate all diseased animals, or rather to separate those which are not diseased from the sick ones.

Prof. Trasbot advises as the surest plan of arresting the disease, to turn all the animals out, and mentions several instances to prove its advisability.

As soon as typhoid fever manifests itself in a stable all well animals are better off outside than inside, especially those that are young and green, and if they can be given complete freedom in a field, straw yard, or open shed, the spread of the disease will be more completely arrested than by any other method, and my experience in this respect is entirely in accord with that of Prof. Trasbot.

As a further precaution it is necessary to thoroughly cleanse and disinfect the stables and whitewash, using a small quantity of chlorine or carbolic acid in the lime wash.

Animals after recovery, even after every symptom and manifestation of the disease has disappeared, will remain weak and unfit for service for several weeks, so that it is not possible nor prudent to expect service from them until it is seen that they are strong and well fitted for it. This fact applies to those animals that have had the disease in a very mild form, quite as much as those more seriously affected, so that they should be returned to work only after they have manifestly regained their accustomed physical vigor.

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AZOTURIA.

By DR. W. S. WINGET, Farmingham, Ill.

A paper read before the Illinois State Veterinary Medical Association.

In selecting this as my subject upon which to make a few remarks, I had in view the learning of other experiences with this disease. As the literature on this disease, as far as I could find, is quite limited, so will my paper be.

In giving the history of azoturia, it will be necessary for me to quote from Williams and the lectures of Dr. Baker on this disease.

When this disease was first discovered, there seemed to be a difference of opinion as to just what name should be applied to it. In Williams we find that Mr. Haycock gave the name, at the suggestion of a friend, "hysteria." Also, we find in Gamgee's "Domesticated Animals," the same malady is described as "Enzoötic Hæmaturia of Horses." Williams quotes a German writer, who states that it occurs in stallions and geldings only, or very rarely in mares, while Mr. Haycock, on the contrary, says it occurs in mares only, and for this reason gives the name "hysteria." Dr. Williams says it occurs in both horses and mares, which I have good reasons to believe to be correct. Dr.

Baker describes azoturia as a blood disease, of a plethoric type, characterized by sudden prostration, and inability to rise when down, caused by exercise after a spell of idleness, and during idleness high feed, giving rise to too much nutrition in the blood, an excess of urea, and non-elimination of effete material. All ages, sexes and breeds are subject to it, but it is most often seen in horses of first cross, as a blooded stud with a common mare.

ETIOLOGY.—We find azoturia in horses that have been highly fed and too little exercised. We find the urine overloaded with urea. Urea is the nitrogenous constituent of the urine, and in feeding highly-nitrogenous food we get an excess of the urea, causing the urine to become thick and dark or coffee-colored. Williams says the blood is charged with a superabundant quantity of albumen, unappropriated by the tissues, and that exercise, by increasing the rapidity of the circulation, and the respiratory movements, induces a rapid oxidation of such superabundant albumen, whereby it is transformed into urea, hippuric acid, etc., with which the blood becomes overloaded; and the kidneys stimulated to excrete what is deleterious. Albumen is occasionally found in the urine, but this is by no means constant, its presence, however, points to an aggravated form of the disease.

SEMIOLOGY.—In giving the symptoms I will describe a few cases I treated within a short period of one day last March. Mr. R——, living four miles west of Farmington, Ill., came in haste and gave me the following symptoms and history. That his neighbor had started for town, driving a fine draft mare, and she became very lame, broke out in a sweat, went down, and was unable to get up, and he was of the opinion that she had slipped and strained her back; also his mate had slipped and fell in the barn, both at home was suffering intense pain. The weather had been stormy, and he kept his horses housed in the stable for ten days without exercise. In the morning he had turned two of the horses in the barn-lot for exercise. In half an hour he decided to stable them, as one of them went very lame.

In catching it, it went down, and was unable to get up. It broke out in a profuse sweat and seemed to suffer great pain.

Mr. R—— hitched his mate (a large clumsy draft mare, weighing 1,400 pounds, half Norman), and started for Farmington, four miles distant. He noticed when he left home that his horse went lame in the right hind leg; trotted along for a mile, when his horse went down.

He stayed with his horse, and started a neighbor, near at hand for me, and when he arrived his horse was sweating profusely, the gluteal muscles swollen tense and hard, and the horse in a very excitable, nervous condition; pulse 75 to 100. I had him taken to my stable, withdrew his urine (which was of a dark coffee-color), and prescribed the following treatment:

R. Potassii Bromide $\bar{\text{z}}$ iv, and Ext. Gelsemii Fluidi $\bar{\text{z}}$ ii. Every three hours. Citrate of Lithium $\bar{\text{z}}$ iii, every two hours. I also ordered hot packs kept constantly on his loins, changed every few minutes, which I consider of the utmost importance in every case.

In the third case I had prescribed all the lithium I had in stock, and as I was of the opinion that it was a specific in all cases of azoturia at this date, I started a messenger to the nearest town for it. In the meantime I drew her urine and prescribed the following: R. Potassii Bromide $\bar{\text{z}}$ vi, Ext. Gelsemii Fluidi $\bar{\text{z}}$ iii. Every two hours for three doses and hot water packs as in the third case.

The second case was very quiet, with a pulse of 60, unable to get up, and with extreme muscular debility. I treated this case simply with wet blankets or packs over the loins and hips, changed every five minutes for six hours, and afterwards at longer intervals. Stimulants of whiskey $\bar{\text{z}}$ iv, every four hours.

I am not boasting on the treatment when I say that every case was on its feet the second day and made a nice recovery, but wish to impress on this association that I am strongly in favor of warm applications to the loins and back in these cases. If surroundings are favorable—that is, a warm box stall, with dry blankets properly applied afterward.

Dr. Williams says he has never seen any benefit accrue from external applications to the loins or back; on the contrary they increase the irritability. In every case where I have used them they gave ease and comfort to the patient. While not claiming that this remedy is a specific, I have found that it gave the patient great comfort and rest.

I did not relate these cases on the plea of any individual merit, but simply to illustrate the facts as I find them.

PENETRANT CAUTERIZATION IN THE TREATMENT OF LAMENESS FROM OSTITIS.

BY E. STURGE, V. S., Scranton, Pa.

Read before the Keystone Veterinary Medical Association.

Lameness from ostitis, and more especially from disease of the joints, is very common in our patients and no less serious, on account of the high development and the great work which is put on the limbs of the horse, what wonder that they are subject to these various troubles.

A perfect moving horse, with a perfect limb, may stand a great amount of work of any kind, but so many suffer from faulty conformation, from an hereditary tendency to bone diseases; so many have been put to hard work before arriving at maturity, and others are working under many disadvantageous circumstances, that we are often called upon to patch them up.

It is in the treatment of bone diseases, such as bone spavin, ringbone, splint, side bones and bony exostoses that I wish to refer to in this paper.

Before going further, it is well to lightly review the pathology of these diseases so that we may intelligently understand what we are treating and how we are to bring about a cure.

Take for example an ordinary bone spavin causing lameness. Here we have at first an inflammation originating in the cancellated structure of the bones involved. From here it soon spreads to the periosteum, the interosseus ligaments and the cartilage of these joints. An exudation is gradually thrown out between the bones and their cartilage, the nutrition of the

cartilage is impaired and ulceration of it ensues. When once there is ulceration of this structure, it can never regain its normal condition—nature never repairing this tissue when it is seriously diseased. Gradually the cartilage is absorbed, leaving the exposed surfaces of the bone in contact, thus enabling their vessels to communicate with each other, and true ankylosis can then take place. Periostitis is also taking place and the bone cells of the inner layer of the periosteum, which have been lying dormant, once more going to producing bone. A band of lymph is thrown out which is gradually converted into bone, constituting the exostosis so often seen in these diseases. This band of bone, endeavoring to cement the parts together, is a very important factor in producing ankylosis.

Very often, and especially when the conformation of the joint is bad, the diseased process starts from a strain which has torn a ligamentous insertion, lacerating some of its fibres and possibly injuring the periosteum. From this point the inflammatory process proceeds, involving the same structures as before. The same pathological phenomena are taking place in all bone diseases of this class with slight modifications. But this process is slow; the inflammation is of a sub-acute, or a chronic form, and our treatment must be to hasten things along. It is by converting a sub-acute form of inflammation into an acute, by setting up a reparative inflammation within the diseased structures and by aiding nature in every possible way that our success lies.

This is not the theory of counter-irritation or metastasis, for when destruction of the cartilage has taken place, we certainly do not want to attract the inflammatory process elsewhere. Our object should be to stimulate the reparative powers of nature to their utmost, and it is good practice to get as near the seat of trouble as practicable, and to spare the integument all we can. It is not the mere application of a hot iron, drawing fantastic designs, but it is the methodical and scientific introduction of heat into the diseased structure to bring about a certain result.

The inflammation produced by this form of cauterization,

when properly applied, is largely localized in the diseased tissues, and it is almost impossible to produce anything like this reparative inflammation, within the diseased structures, by medicinal remedies applied to the integument without unduly irritating this tissue and probably causing large patches to slough, leaving unsightly blemishes.

It is well to remember that many exostoses in close proximity to joints may cause acute lameness and still the joint not yet be seriously affected. By prompt measures such as a scientific and proper use of the actual cautery and repose, the disease may be arrested before it involves the joint. This is often so in many cases of bony exostoses in the neighborhood of the knee, fetlock, pastern and hock joints.

All these diseases are the more satisfactorily treated the earlier they are taken in hand. A bone spavin, taken in its incipient stage, may soon yield to treatment, though that treatment must be bordering on severity. Usually when the disease starts, it is very circumscribed in its extent, and if we can only get at this particular part before the surrounding tissues are involved and before the nutrition of the parts has been impaired, resolution may soon be brought about.

The actual cautery is the last, and often the only successful recourse, by which a cure is effected. It is always well to consider treatment by milder means, for in case of splints and side-bones, all that is generally required is the application of a smart blister. But any time spent in treatment milder than this is valuable time lost.

But in the case of bone spavin, with or without exostosis, bog spavin, accompanied with lameness (for such lameness is generally the result of bone disease which is causing the over secretion of synovia) ringbones, exostosis of the pasterns and in the region of the knee, nothing can approach penetrant cauterization in the sureness and speediness of a cure, and the blemish is less than that of any other method of cauterization. It may be well in some cases to combine the use of the feather iron with that of the points; this might be the case in bog spavin,

and in bone spavin in coarse heavy horses where we have reason to believe the inflammatory process has involved a large surface of the articulation. In such cases always make the points first.

INSTRUMENTS.—The best instrument for this mode of treatment is the thermo-cautery, for with its use the operation can be performed more rapidly, and is less painful, and the wounds heal more quickly than when iron is the agent used. The radiation of heat is less and there is no scaling of metal, and the operation can be performed regardless of forges. I use a Farny cautery, which so far as the points are concerned, gives good satisfaction. The tubing should be two and one-half feet long, so that an assistant can do the pumping as the operator will have both hands fully employed.

A very serviceable instrument is made of Norway iron, consisting of a handle and bulb, with a point protruding. The bulb should not be too long, and the point should be three-fourths of an inch in length, about the thickness of a quill at its base, tapering, and the tip not sharp. As the point burns off, it can be lengthened by filing back into the bulb, this is to guard against scorching the tissues with the bulb.

An instrument similar to this can be made by having a hole bored through a bulb and a fine rod passed through this, and so arranged that, as it burns off, it can be let down. The point can be finer than in the former instrument, and this is a useful iron to use after the other has penetrated the tissues some way.

The platinum point set in a cast iron bulb is used by many, but it cools quickly and the point is very flexible. Probably this might be remedied by having the platinum twice as thick at the base of the point as it is now generally manufactured. Copper and bronze are also used in making these tools.

The points are usually placed one-half to one inch apart, and they should cover a larger surface than that which the diseased tissue is limited. It is well to arrange them so that you can let them well into an exostosis and also to get points above and below the articulation we expect to ankylose. Follow no

pattern unless on a high exostosis, but place your points where you can safely puncture and where they will do the most good. The severity of the firing will depend on the age of the patient, and the area to which you suppose the diseased tissue is limited; the length of time lame and the amount of lameness will also be factors. The severity of courses will be varied by the depth to which we puncture and scar, the closeness of the points and the extent of the tissue they cover. A few points properly placed and well let in, will often do more good than three times as many superficially burned.

If not thoroughly familiar with the parts, it is well before operating to spend sometime in examining a specimen of the joint, comparing it with the living and decide where your points can be safely placed and where they will do the most good. Carefully examine the exostosis and satisfy yourself as to the bones involved.

As an example, we can take a ringbone. A row of points can be placed above and below the pastern joint, and if it extends high upon the os-suffraginis, an extra row will be of benefit. A ringbone generally requires pretty severe firing, especially in old patients. On that part of the joint which is covered by the tendon of extensor pedis, we are not able to accomplish much, but at the sides the cautery should be so introduced as to set up plenty of inflammation in the periosteum. The growth of the bone thus produced acts much as a splint, while complete ankylosis takes place. Of course no punctures are made in the posterior part of the joint.

In the case of an ordinary bone spavin limited to the lower part of the hock joint it is not always necessary to use the cautery all over the articulation, in parts where we know the tissues are perfectly healthy. It is well to map it into three areas—the first to the inside of the saphena vein, the second between the saphena vein and the tendon of extensor pedis, and the third to the outside of this tendon.

In the first area we can, if the exostosis is at all marked, put from five to seven points, touching the large and small

metatarsals and the three cuneiforms, if all these bones are supposed to be involved. In the second area, we can usually get about three, and if thought necessary to puncture the third area a few superficial points may be placed, but it is only in a very clean cut hock that we could expect to reach the diseased bones in this area. A few superficial points are placed around those which have been let in deeply.

Before operating, the shoes should be taken off and the feet pared level. The hair should be clipped from the joint, and the skin brushed thoroughly clean. If the operation is to be upon a ringbone or spavin, or of an equally serious nature, throw the patient, but circumstances may render this unnecessary or impossible.

One can often get along well enough with a feather iron by allowing the patient to stand, but the use of the pointed iron is a finer operation, requiring the patient's quietude, and the operator can work with more confidence and skill while the animal is secured.

I prefer the side lines, so called to distinguish them from the English hobbles. They are provided with a breast and loin strap and flex the hock so that the fetlock almost touches the stifle. The limb to be operated upon is released, though in case of a hind leg, not quite so readily as in the English hobbles. But the animal goes down so much more safely, and is so thoroughly secured when down, that it is preferable to any throwing apparatus that I have seen. A rope is attached to the pastern of the leg to be operated upon and held by an assistant. Every precaution must be taken for the safety of the patient, as fasting before throwing, a good bed of straw, plenty of help and a cushion for the head.

OPERATION.—The cautery being hot, the operator uses the first two fingers of the left hand to determine the exact point of each puncture, selecting slight eminences and avoiding the puncture of blood-vessels and bursæ. The punctures are not made by one application of the instrument, but by several. When on an exostosis let the cautery well in and in the imme-

diate vicinity of diseased tissues be sure that the cautery touches solid structures and sears them.

Be careful that the leg is always in the same position while operating, otherwise the perforation through the integument might come over another part and thus an important bursæ be punctured.

In using irons, of which there should be at least three, the fire must be close at hand and there should be assistants to attend to the heating and passing of them to the operator. Apply pressing but lightly and do not hold in one spot too long, guarding against severe radiation of heat which still has much to do with unsightly blemishes.

It is wonderful how severely one can cauterize a diseased joint in this way, setting up a severe inflammatory action and have no bad results. But much judgment is required in deciding the severity which is called for in each individual case. Young animals do not require such severe cauterization as older patients, and intense swelling and sloughing of the tissues might be produced. Nature needs assistance of varying intensity, according to many conditions which are readily apparent. It is well to bring about such an action as will be pretty well confined to the joint affected and not cause a severe swelling of the whole limb, for the reparative powers of nature do not accomplish much while the whole limb is dropsical.

A blister, composed of equal parts of biniodide of mercury and cantharides, mixed with one to five of lard, should be applied immediately after the operation to the whole joint, but it need not be very thoroughly rubbed in that part which has been punctured deeply. The patient is then placed where he will be kept quiet and the usual attention given him. He should not be walked more than a short distance, as air would be pumped in by this process.

After the blister has been washed off he should be placed in a roomy box-stall and kept perfectly quiet for at least a month; if the firing has been at all severe, and it is necessary to tell the owner not even to lead him out to water. If he has any ten-

dency to meddle with the parts a useful preventive is the "neck cradle" or other such device. The wound wants careful attention for sometime when the cautery has been deeply inserted, about ten days after the operation there is often quite a fetid discharge, requiring the cleansing of the parts with a weak antiseptic wash and the application of astringents and possibly caustics. This should be attended to until the granulations are healthy.

In many cases, at the expiration of a month, it is good practice to turn them out in a yard or pasture, but if inclined to run and play, the patient is better off in a box-stall until cured.

In about six to ten weeks the blister may be repeated if thought necessary. The application of this will be determined by the subsidence of inflammatory action which has been produced, the state of the integument and the lameness existing. If at the end of three months, the patient is still lame, the operation may be repeated. One should not feel discouraged because the first operation may not have had the desired effect, as the second will often prove successful.

A favorable sign is the gradual improvement in the lameness and the animal standing in a more natural position. The length of time we should expect a cure will vary from six weeks to a year.

Some old patients fired in this way, where complete ankylosis does not take place, may be very much relieved of their lameness by the movement of articulation being lessened from the organization of the effusion which has taken place around the joint, and by the subsidence of the inflammatory action.

If from any cause we are unfortunate enough to puncture an important bursæ, treatment should be the application of an antiseptic dressing and compress to the part. This should be changed daily until the flow of synovia ceases and kept in position some days after. By preventing the air from entering the wound, acute inflammatory action and pain will probably be prevented.

I can call to mind many cases in all classes of patients

where the results have been most gratifying after this operation, and where almost hopeless cases in aged animals have been returned to work in a wonderfully short period of time. But once in a while an apparently easy case will baffle all treatment and insist in going lame after repeated firings.

INFLAMMATION.

BY DR. A. BABB, D.V.S., Springfield, Ill.

A paper read before the Illinois Veterinary Medical Association.

The term inflammation is derived from the Latin *inflammatio*, a kindling, a conflagration; it is allied to the verb *inflammo*, to set on fire; the root of the word is the noun *flamma*, a flame, a blaze. All these point to the subjective sensation of heat experienced by the patient suffering from the acute stages of the disorder.

The very great importance of a full knowledge of this subject is manifest from two well-known facts: namely, that almost every organ of the animal economy is subject to its attacks and that the pathology of inflammation is the same in all of them.

ETIOLOGY.—Many heroic drugs, if not properly diluted or administered in a suitable excipient, will severely inflame the parts with which they come into immediate contact, such as the buccal mucous membrane, tongue, pharynx, œsophagus and other parts of the *prima via*.

Drafts of air, or a cold shower bath at an unseasonable time of year, especially on a heated horse may cause laminitis, pneumonia, nephritis, or the inflammation of any other important viscus. Over-exertion is also a fruitful source of the evil as seen in nephritis and lymphangitis, the former brought about by the immoderate exhibition of diuretics, the latter by an excess of stimulating food passing through the lymph glands, or in podophyllitis from the protracted driving of an unseasoned horse particularly on a hard, resilient surface.

Direct violence, such as nail-pricks, blows, incisions, either accidental or surgical, originate the pathological condition under consideration. Blisters, escharotics, the potential caus-

tics and the actual cautery stimulate indolent parts by substituting acute inflammation for lethargy.

Specific microbes, or their spores, on entering the circulation, after the expiration of their period of incubation, inflame the parts on which they expend their force by a sort of elective affinity, and thus produce some one of a large number of diseases whose origin till the last decade was involved in mystery.

Thrombi, when detached from the seat of their formation, often cause embolic infarction and subsequent inflammation.

Prolonged maceration, as seen in the too persistent tubbing of the legs of track horses, or in the extremities of cart horses exposed to mud and water daily, frequently produces a veritable dermatitis.

In fine, any active congestion, other than physiological, if not cut short by appropriate treatment, is liable to merge into inflammation with all its dire consequences.

PATHOLOGY.—The blood plays a most important role in the phenomena of inflammation, hence it is advisable to turn some attention to it. The vital fluid is composed of a watery portion called plasma. or liquor sanguinis, and a solid, made up of four distinct microscopic bodies, the corpuscles.

These are the ordinary red blood cells or hæmocytes; the white cells or leucocytes; Hayem's hæmatoblasts and the invisible corpuscles of Norris.

The red blood cell of the horse, discoid in shape, is only $\frac{1}{4500}$ inch in diameter, but it makes up in number for its minuteness, as careful estimates show that the enormous amount of about 5,000,000 of them exist in a cube of blood, the one $\frac{1}{25}$ th of an inch on its edge.

The leucocyte is globular in form, possesses amœboid movements, and is the $\frac{1}{2500}$ of an inch in diameter. It exists in healthy blood in the proportion of one to each 500 of the red.

In 1878, Hayem described small, spherical, colorless bodies which he found in the blood and named hæmatoblasts.

There is one hæmatoblast to each twenty red blood corpuscles.

The so-called invisible corpuscle of Norris is not to be seen in the intact blood as it is of exactly the same color and refractive index as the liquor sanguinis, but can be readily perceived by drawing off that fluid by any one of several ingenious methods. They are of exactly the same size and shape as that of a red blood corpuscle, *i. e.*, like a biconcave disc.

The phenomena of motion and mode of circulation of the corpuscles, as observed by microscopic examinations, are wholly due to the laws which govern solid bodies of the same shape and specific gravity passing through small tubes in a similar liquid and are totally independent of the heart, endothelium of the blood-vessels and vaso-motor nerves. The present century has removed this, as also many other facts, from the realm of the mysterious to that of the purely physical.

In the normal state the hæmocytes circulate with a gliding motion, having their diameters transverse to the long axis of the blood-vessel, if it is so small that one of them nearly or quite fills up its lumen; while the leucocytes roll along against its superior wall. Hayem's hæmatoblasts, very minute, are interspersed among the red blood corpuscles in the axial portion of the vital current.

Leucocytes more principally in the slow-flowing peripheral part of the stream, and being viscid, have a tendency to stagnate and pass by migration through the walls when traversing the capillaries. I have searched in vain for facts as to the mode of circulating, followed by the invisible corpuscle of Norris.

Such is the normal, physiological condition of the circulation in an organ. However upon application of any of the causes mentioned above, which produce inflammation, there results, first of all, an irritation and congestion during the early stages of which the blood moves much more rapidly than usual and the corpuscles may be seen to dart through the capillaries with unwonted speed. This acceleration usually lasts for six or eight hours. Soon, however, owing to the increased blood pressure, much plasma is exuded into the surrounding tissue, leaving the corpuscles too dry to circulate rapidly. They be-

come more viscid, cling to the walls of the vessels, and that very strange phenomena of their passage through the unruptured parietes is observed.

Leucocytes migrate from both small veins and capillaries while there is diapedesis of hæmocytes from the latter only. They form a thick covering around the minute blood-vessels in the inflamed part.

Comparative stasis has now set and there is little circulation through a badly affected part for several days.

RESULTS.—The results of inflammation are the following: Resolution, effusion, suppuration, induration, adhesion and gangrene.

Resolution is seen where the cause is impotent or when the whole process is cut short by timely and vigorous treatment, leaving the organ in a normal state, with no signs of the prior pathological condition.

Effusion is the outpouring of a large amount of serum into the neighboring cellular tissue or some adjoining cavity as seen in hydrothorax from pleuritis, ascites from peritonitis, etc.

Suppuration ensues when the cells of the inflamed tissue are changed into those of pus by the presence of some one of several different pyogenic microbes.

Pus commonly springs from areolar tissue or from mucous surfaces.

Induration usually arises from protracted irritation or from inflammation of a low, chronic type, especially when located in tendinous, ligamentous or dermal structures.

Adhesion occurs principally where two inflamed serous surfaces are held in juxtaposition finally coalescing. Inflammation of serous parts tends to adhesion of mucus, to suppuration.

Gangrene, the death of a large part, is due to incompetency or total suspension of circulation.

SYMPTOMATOLOGY.—Among the symptoms of inflammation are pain, heat, redness, swelling and tension.

Pain springs from injury to, or pressure of the exudates on, the local nerves; in some cases, accordingly, free incision of the

inflamed part will greatly reduce the pain by removing this pressure.

The heat is due to increased chemical activity in the part, and this largely intensified, topical combustion causes the accelerated breathing of the patient to furnish the requisite amount of oxygen, just as threatened carbonic acid narcosis in the newly born foal or other young, by paralyzing the par vagum produces rapid respiration.

Redness is a sequel, the increased flow of blood to the part and perhaps, also, to the extravasation of hæmocytes. It attracts attention in our patients, chiefly where the skin is white and the hair short.

Swelling and tension originate from infiltrated serum which permeates the adjoining portions and puts them on the stretch.

TREATMENT.—For the sake of convenience, this section of the subject will be subdivided into two parts, constitutional and local.

To dispel the hyperæmia of the congestive stage of inflammation, belladonna, given internally, is the remedy par excellence, but we, more unfortunate in this respect than our cousins, the M. D's, are often not called till too late to derive the greatest benefit from this most useful agent. Many times in fact the veterinarian is summoned so tardily that no system of therapeutics, however sound, would be of use, and nothing could restore the patient unless some one should be found, as of old, who had the power successfully to say "Lazarus come forth!"

Of all drugs not only to allay the pain, but also to shorten the sthenic stages of inflammation, when its seat is an extensive serous surface opium is the chief; aconite and belladonna are frequently employed as assistants to it.

Enteritis in the horse, on account of the great extent and vascularity of these viscera in solipeds, is incurable, but morphine and atropine, or large doses of the crude drugs from which they are derived, afford the greatest relief.

As an antipyretic, alcohol with acetanilid or some of the other coal tar products, gives great satisfaction.

Demulcents in the shape of mucilaginous drinks, linseed tea and the like prove very serviceable when the principal mucous membranes are invaded. Soothing agents in the form of electuary are found of use in pharyngitis and similar troubles.

The acetate of potassium, or some similar antiphlogistic, should be administered to remove the debris consequent on the retrograde metamorphosis.

Digitalis, combining in a remarkable degree the properties of a heart tonic and a diuretic will aid materially to carry off by the kidneys the effusions of dropsy in any of its many forms.

When the upper air passages are involved the inhalation of medicated steam, constantly generated, is the *sumnum bonum*.

The regimen should be restricted in proportion to the acuteness of the attack. In general, stimulate the vicarious organs allowing the inflamed ones to rest.

LOCAL TREATMENT.—Hippocrates, the father of medicine, more than four hundred years before Christ, taught that it was the business of a physician to help his patient, or at least to do no harm. Bear this well in mind, it is better to do nothing than to do worse; better leave the meek dumb creature to the *vis medicatrix naturæ* than to torture it with irritating applications which only invite complications and add fuel to the flames.

It is a painful duty to say, however, that some of our brother practitioners seem not yet to have divested themselves fully of the common notion that drastic methods are necessary in treating the domestic animals, which are in reality bone of our bone and flesh of our flesh.

In the sthenic stages all heroic mixtures should be scrupulously avoided.

As an anodyne liniment, one of opium, belladonna and alcohol is among the best. Opium and the acetate of lead, though chemically incompatible are found to work well together in actual practice as a lotion; or soap liniment with aconite or veratrum viride will answer.

Avoid turpentine, aqua ammonia or any other Herculean prescription, and pin your faith to analgesics in some form.

Topical baths, hot fomentations or warm poultices where they are practicable, prove of the greatest service. In the primitive part of an attack of navicularthrititis, podophyllitis or fibro-chondritis, hot pediluvia are the sheet anchor so far as the local treatment is concerned.

When the acute inflammation has subsided and there is thickening and weakness, the attending physician is warranted in proceeding more vigorously—even to vesication. Probably the best epispastics are cantharides and mercuric iodide or a mixture of the two.

Under no circumstances use the oil of the croton tiglium, for even in the proportion of one to eight of oleum lini, it is liable to blemish. Euphorbium also is a dangerous remedy.

The propriety of counter-irritation in the chest diseases of our patients is to be questioned seriously. This was originally practiced under the crude impression that two inflammations could not exist in the same structure at the same time, so to cure the one on a deep-seated and vital organ, you had but to start another on the surface—than which there can be no greater fallacy. And the application of these irritative drugs to the abdomen in enteritis is most absurd.

If pus is formed, liberate it; if gangrene appears excise it, subsequently using the actual cautery. Adhesions of the pleuræ commonly prove intractable.

In surgical inflammation, castration the most frequent operation encountered, may be taken as typical. Aseptic instruments and hands with rigid cleanliness afterwards will ensure good results if the surgeon understands his business. The total discarding of lard to the parts, or other animal fat, which the heat of the patient soon renders rancid (thus inducing further inflammation and perhaps peritonitis), will prevent many of the unfortunate sequelæ of this necessary performance which every empiric, however illiterate thinks he fully understands. If it became necessary for you to have your finger amputated would you wish it to be removed with a clamp, or the actual cautery, or even to have the wound sprinkled with such caustics as cor-

rosive sublimate or the red precipitate of mercury? These agents are of as little use in intelligent castration. Do the work with an appropriate instrument which will stop the flow of blood, leaving nothing to interfere with the healing of the wound.

In the management of many cases of inflammation, as in other complaints, hygiene and general care are of as much importance as the selection of remedies just as in ancient battles the victory was due as much to the shield as to the sword. The successful veterinarian will look to every prophylactic measure, the quantity and quality of both feed and water, the ventilation of the stable, the size, location and quietude of the stall as well as the amount of bedding and clothing, for if any vulnerable point is left unguarded, there some complication may strike as the fatal arrow of Paris did the heel of Achilles. All in all the study and practice of medicine is as the immortal Hippocrates long ago concluded by saying "Life is short and the art long; the occasion fleeting, experience fallacious and judgment difficult. The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals co-operate."

VETERINARY JURISPRUDENCE.

VETERINARY SURGEON—DEGREE OF SKILL AND CARE.

By L. W. DINKELSPIEL.

A recent decision of the New York Supreme Court contains an explicit exposition of the liability of veterinary surgeons in a case of failure to exercise reasonable and ordinary skill and care.

An action was brought in the City Court of Albany by the plaintiff, a veterinary surgeon, to recover for services rendered and medicines furnished by him, in attending upon a sick horse of the defendant, and on account of which plaintiff claimed judgment for ten dollars. The defendant admitted the employment of plaintiff, but denied that the services rendered and medicines

furnished were of the value of ten dollars. He also alleged lack of knowledge, unskillful treatment and negligence of the patient in the treatment of said horse, whereby defendant was compelled to employ another veterinary surgeon, under whose skillful treatment the horse recovered.

On the trial the plaintiff was sworn as a witness and testified as to his attendance upon and furnishing medicine for defendant's horse, and as to the value of said services and medicine. He testified that he prescribed for inflammation of the bowels. On the part of the defendant evidence was produced tending to show that the horse did not have inflammation of the bowels, for which the plaintiff treated him. That the last time plaintiff visited the horse he was no better, and that plaintiff was informed of that fact. The horse was at that time throwing himself, getting up and throwing himself continuously. That one could hear him out on the sidewalk and people complained of the noise. That defendant kept a man in attendance upon him. That the animal being in this condition, plaintiff left agreeing to call again the next day very early, but in fact he never came. That plaintiff's last call was on Monday, and on Tuesday night defendant called in another veterinary surgeon.

The opinion in this case when before the Supreme Court was written by Judge Putnam. In the course of the decision the learned judge held that the same rules are applicable to the case of a veterinary surgeon bringing an action to recover for the value of services, as have been held applicable to other physicians and surgeons. He must possess and exercise a reasonable degree of learning and skill. He must use reasonable and ordinary care and diligence in the exercise of his skill and the application of his knowledge.

(*Carpenter vs. Blake*, 10 Hun., 358; *Hathorn vs. Richmond*, 48 Vt., 557.)

Further the decision declares that on the evidence in this case, the City Court could properly find want of care and negligence on the part of plaintiff in treating defendant's horse, in fact great negligence. The evidence produced by defendant,

which the trial judge had the right to believe, showed that plaintiff being called to treat the animal, and having undertaken its cure on the day of his last visit, the horse at that time being very ill, agreed to call the next day early, but neglected ever to call again. That the action of the plaintiff in leaving the animal he had assumed to take charge of in such a dangerous condition and failing again to call, according to his promise, was such clear negligence as justified the judgment rendered by the trial court. (See *Williams vs. Gilman*, 71 Mame 21; *Ballou vs. Prescott*, 64 id. 306.) And that the City Court could properly determine that defendant's horse was suffering from an "impaction of the colon," instead of inflammation of the bowels, and therefore that the plaintiff who prescribed for the latter disease, did not exercise a reasonable degree of skill in his treatment of the horse.

This is the case of *Boom vs. Read*, reported in 67 Hun., 426; S. C., 52 State Rep., 777; 23 N. Y. Supp., 421.

VETERINARY LEGISLATION.

REGULATING VETERINARY PRACTICE IN MARYLAND.

BALTIMORE, MD., April 19, 1894.

To the Editor AMERICAN VETERINARY REVIEW:

DEAR SIR:—Herewith you will find a copy of the law regulating the practice of veterinary medicine and surgery in Maryland. By the fifteenth section much latitude is given the owners of animals outside the City of Baltimore, to which place not being in any county the act applies strictly.

The modification of the bill was found necessary on account of the few veterinarians practising in the counties. You will oblige me by publishing the law with this letter for the benefit of students and others intending to practice in this State.

Yours truly,

A. W. CLEMENT, *Secretary*.

AN ACT to regulate the practice of Veterinary Medicine and Surgery in the State of Maryland.

SECTION 1. *Be it enacted by the General Assembly of Maryland,* That a commission is hereby established to be known under the name and style of "State Veterinary Medical Board," to consist of five commissioners, who shall be members in good standing of some school of Veterinary Medicine, who shall be appointed by the Governor every four years, and who shall hold their office until their successors are duly appointed and qualified with power in and to said board to adopt by-laws and regulations, such as they may deem advisable to carry into effect the provisions of this act, provided the said by-laws shall not conflict with the Constitution or laws of this State or of the United States.

SEC. 2.—It shall be unlawful for any person or persons to practice Veterinary Medicine and Surgery in the State of Maryland without having previously obtained a diploma from a college duly authorized to grant such to students of Veterinary Medicine and Surgery or to those who have passed satisfactory examinations before the State Veterinary Medical Board or as herein provided for.

SEC. 3.—The said State Veterinary Medical Board shall hold their meetings at such times and places as they may deem best, which times and places shall be set out fully and regularly in their by-laws.

SEC. 4.—The State Veterinary Medical Board shall examine all diplomas as to their genuineness, and each applicant not holding a diploma shall submit to a theoretical and practical examination before the State Veterinary Medical Board, said examination to be written, oral or both, which examination, if passed to the satisfaction of the said Board, shall entitle the applicant to practice Veterinary Medicine and Surgery, subject to provisions and regulations of this act, and regulations of the said Board.

SEC. 5.—All examinations of persons not graduates shall be made directly by the State Veterinary Medical Board, and the certificates given by the said Board shall authorize the possessors to practice medicine and surgery in the State of Maryland. All examinations of un-graduated practitioners must take place before the thirty-first day of December, eighteen hundred and ninety-four. After that date no certificate shall be granted except to persons presenting diplomas from legally chartered colleges.

SEC. 6.—Any person shall be regarded as practicing Veterinary Medicine and Surgery, within the meaning of this act, who shall have received a license as mentioned in Section 4. But nothing in this act shall be construed to prohibit members of the Medical profession from prescribing for domestic animals in case of emergency and collecting a fee therefor, nor to prohibit gratuitous services in an emergency, nor to prevent any person from practicing Veterinary Medicine and Surgery on any animal belonging to himself or herself. And this act shall not apply to commissioned Veterinary Surgeons in the United States Army.

SEC. 7.—*And be it enacted,* That it shall be the duty of such Board to keep a register of all practitioners qualified under this act practicing Veterinary Medicine and Surgery or any branches thereof, in this State, and cause the same to be published at least once a year in two newspapers published in the City of Baltimore.

SEC. 8.—*And be it enacted,* That the said Board shall within six months from the date hereof, prepare said register, in which all the names of all graduate practitioners

in the State at the time and in actual practice shall on application to the said Board, be inserted without examination, and shall also on application insert the names of such persons who are practitioners in actual practice without a diploma or certificate of qualification from a recognized school, who have been in practice for five years and upwards prior to the passing of this act upon proof to the said Board, that they have been so practicing, that all persons practicing at this time and not having been so practicing for five years antecedent to this act, shall undergo an examination before the said Board, and if found by said Board competent to practice, the persons so examined and approved shall be entitled to registration.

SEC. 9.—*And be it enacted*, That the said Board shall have power to reject any applicant for registration whose examination papers or diploma are not satisfactory.

SEC. 10.—*And be it enacted*, That on and after six months from the date of the approval of this Act, no person shall be permitted to practice Veterinary Medicine or Surgery or any branch thereof, in the State of Maryland, who does not possess a diploma issued from a College or School of Medicine, duly incorporated and legally licensed to issue diplomas, and if said diploma shall be issued after the first day of January, 1895, it shall be received only from a College or School of Veterinary Medicine which shall require a three years' course of study before issuing said diploma, and shall have passed such examination or test, as the case may be, from time to time, instituted as a test of qualification by such Board, and persons producing such certificates or diplomas who pass such test examination shall, on payment of such fees as hereinafter are provided for, be registered as Veterinary Practitioners.

SEC. 11.—*And be it enacted*, That no monies shall be paid out of the State Treasury for the use or purpose of said Act.

SEC. 12.—*And be it enacted*, That any person not registered who shall practice Veterinary Medicine and Surgery or any branch thereof, within the State of Maryland, shall be deemed guilty of a misdemeanor and shall be fined in the sum of not less than one hundred, not more than five hundred dollars for each offense, or imprisonment in the House of Correction for any term not less than three months, nor more than twelve months, for each and every offense.

SEC. 13.—*And be it enacted*, That the said Board shall be the prosecutor in all cases under this act and that such fine and imprisonment may be imposed by any Justice of the Peace of the City of Baltimore, or any county where such offense may be committed.

SEC. 14.—*And be it enacted*, That a moiety of the fine imposed under this act shall be paid to the informer, and the other moiety shall be paid into the county treasury wherein the offense shall be committed.

SEC. 15.—*And be it further enacted*, That in any part of any Election District of any county in the State where it may not, in the judgment of the owner of the animal, be advisable to secure the services of a duly authorized Veterinary Surgeon, then the person or persons desiring to obtain advice as to the physical condition of any animal or animals belonging to him or her may procure the services of any person that he or she may desire, to give such advice or to perform any services for the relief of his or her animal or animals that may be necessary.

SEC. 16.—*And be it enacted*, That this act shall take effect from the date of its passage.

CORRESPONDENCE.

REGULATING VETERINARY PRACTICE IN VIRGINIA.

RICHMOND, VA., April 25, 1894.

PROF. LIAUTARD, M.D.,

MY DEAR SIR:—Kindly correct, see last month's journal. The only veterinary legislation existing in Virginia is that which incorporated the Virginia State Veterinary Medical Association. The "bill" mentioned in last month's journal was "squelched" by this association and another substituted which completely ignored the unprofessional; this was reported favorably by house committee, but the legislature adjourned before it *could* be acted upon. Many thanks for association recognition. Best wishes.

Yours faithfully,

A. W. SWEDBERG, *Secretary.*

ACT OF INCORPORATION.

1. Be it enacted by the General Assembly of Virginia, That W. H. Harbaugh, E. P. Niles, George C. Faville, William C. Gilchrist, J. H. Adamson, T. A. Donaldson, Joseph T. Bushman, A. W. Swedberg, as well as all others who may be hereafter admitted to membership with them, be a body corporate and politic by the name of the Virginia State Veterinary Medical Association; that they shall have perpetual succession and be authorized to use a common seal.

2. Be it further enacted, That it shall be lawful for the Veterinary Medical Association thus constituted to enact all such by-laws as they may deem necessary and proper for obtaining the objects of their institution and not contrary to the Constitution or law of the United States, or of the Commonwealth of Virginia,

3. Be it further enacted, That it shall be lawful for the said association to require of persons admitted to membership therein such admission fee and annual contributions as a legal quorum thereof may from time to time enact; and if any member shall refuse or fail to pay such admission fee or annual contribution that the same shall be recoverable by the association on motion, with ten days' notice, before the proper courts of this Commonwealth, or in any county, city, or corporation whereof the member so failing or refusing to pay shall be an inhabitant,

4. Be it further enacted, That it shall be lawful for the said association to hold, under any title recognized by the laws of Virginia, such buildings as may be required for their immediate personal accommodation as an association for lecturing rooms, for a dissecting room, and such other apartments as may be manifestly necessary or convenient for the promotion of veterinary medical knowledge,

5. Be it further enacted, That it shall be lawful for the said association to hold under any title recognized by the laws of Virginia, whether coming to them by purchase, donation, or otherwise, so much real property, exclusive of that mentioned in the fourth section of this act, whereof the clear income on an average of ten years shall not exceed two thousand dollars per annum,

6. Be it further enacted, That this act shall be at all times subject to be altered, amended, or repealed, as the legislature of Virginia shall deem necessary and proper,

7. This act shall be in force from the passing thereof.

COLUMBIA, MO., May 14, 1894.

Editor of AMERICAN VETERINARY REVIEW:

DEAR SIR:—The proceedings of the International Veterinary Congress and United States Veterinary Medical Association held in Chicago in October, 1893 will soon be ready for distribution. Each member is entitled to a copy of the proceedings.

Yours respectfully,

F. G. TURNER, *Secretary.*

FOR SALE.

Veterinary practice and outfit for sale, office and hospital rooms free for one year, within one block of Court House. One operating table (Prier's) good as new, full set of dental, obstetrical and ecraseurs, slings, etc. Original cost of outfit \$500. A practice of seven years' standing, no other graduate within forty miles. City of 12,000 or 13,000 inhabitants; three main railroads; richest farming community in the State; nearly one thousand head of standard and registered horses in the county. Reason for selling poor health.

Write for further particulars,

A. E. HERWENT, D.V.S.,

Marshalltown, Iowa.

Fine location for sale at Walton, a village of about 3,000 inhabitants, situated on the N. Y. O. & W. R. R., 180 miles from New York, on the junction of the Delhi Branch; 17 miles from Delhi, the county seat; 21 miles from Hancock, where the O. & W. crosses the Erie Railroad; and 21 miles from Sidney, where the O. & W. crosses the D. & H. Fine office centrally located, good accommodations for boarding patients. Instruments, library, slings, two sets of casting harness, etc., etc. The whole closed out for strictly cash. Terms made known on application. Must sell owing to failing health. Address,

T. H. SMYTHE, V.S.

Veterinary practice established five years in city of forty-five thousand (45,000) in farming country. Only one other veterinary within one hundred and ten miles.

Good climate, good schools, etc., etc.

Easy terms. For particulars, etc., apply,

DR. POE,

Knoxville, Tenn.

SITUATION WANTED.

Veterinary surgeon, graduate in Europe, best references, author of zootechnical and medical works, wishes to find a situation in a veterinary institute, in a breeding establishment, or any other place. Speaks French, German and English languages. Apply,

DR. GOEBBELS, V.S.,

Egg Harbor City, N. Y.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, on January 24th, 1894, at 7.30 P.M.

The President, Dr. Burr, occupied the chair. The members present were Drs. Becket, Blackwood, Burr, Emerson, Towle, Howard, Marshal, Parker, Simpson, Winchester and Winslow. Honorary member, Dr. Stickney.

The minutes of last meeting were then read and accepted, and there being no business before the association, and the regular essayist not having arrived, Dr. Parker read a paper on "The Prevention of Tuberculosis."

In the discussion which followed Dr. Winchester suggested that the association have taken steps to have tuberculosis placed on the list of contagious diseases. It is generally accepted that there is no other disease which causes so many deaths as tuberculosis in its various forms. As showing the value of sanitary reform, he referred to the towns in the Merrimack Valley. These towns use the river water for public services. Through the exertions of one of the members of the State Board of Health, a filtering gallery for river water was put in at the City of Law-

rence; since then the death rate has been much reduced. The death rate from typhoid is now under 4 %, while the death rate from tuberculosis is nearly 8 %. Continuing, he said this association ought to be the first to put itself on record as recognizing tuberculosis as a contagious disease.

Dr. Emerson thinks the idea of conferring with the State Board of Health is a good one.

Dr. Becket said he had been somewhat surprised lately to see in insurance reports an article congratulating the companies and the public on the fact that according to insurance reports, people are getting longer lived, and that deaths from tuberculosis are gradually decreasing.

Dr. Parker stated that the reason given for the seeming falling off in deaths from tuberculosis was because the establishment of Post Graduate schools, and the consequent better education of country practitioners had resulted in greater strictness in examination; fewer poor risks had been taken by the insurance companies with the result that in the insurance commission reports, the death rate from tuberculosis had decreased.

After a further discussion, Dr. Winchester moved that a committee be appointed from members of the association to approach the authorities on the subject.

Dr. Burr wished to point out that in the City of Boston the by-laws required that each animal shall have 1000 cf. Many of the other points suggested by the essayist were at present in force in the city. He thought the cattle commissioners were doing all in their power with the force at their disposal. The amount of work they had to do was very great.

Dr. Howard thinks if anything is to be done in the matter, it should be well discussed, statistics should be looked up, and the association should be sure of its ground. He then moved that the discussion should be continued at next meeting. Seconded by Dr. Winslow.

Dr. Parker moved as amendment that a committee be appointed, consisting of members of the association who have had experience with tuberculosis, to report at next meeting on the

subject of tuberculosis. Seconded by Dr. Blackwood and carried unanimously.

Dr. Winslow then moved that the committee consist of five persons with the president and secretary, ex-officio. Carried.

Dr. Howard moved that the committee be appointed from the floor. Carried. The following committee were then appointed with instructions to report at next meeting: Dr. James B. Paige, Amherst; Dr. Winchester, Lawrence; Drs. Peters, Howard, and Osgood, Boston, with the president and Secretary, ex-officio.

Dr. Simpson then read an interesting paper on "Digitalis."

In the discussion which followed Dr. Howard said he usually tried to limit the amount given to one drachm of the fluid extract in the twenty-four hours. The great danger in its use is because of the digestive troubles that supervene. It should be used with caution. When judiciously used, however, it is a valuable remedy.

Dr. Becket has had good results where the horse has recovered from the acute stage of pneumonia, leaving him with feeble pulse. It should, however, be used with great caution.

Dr. Winchester has had good results from *veratrum viride* in cases where the pulse was 80 or 90 and small and weak, he has used *veratrum*, and in a few hours the pulse has come down and is strong and full; afterwards puts on to alcohol. The after results of "digitalis" are sometimes serious but has never seen any bad results from *veratrum*.

After a good deal of discussion and a vote of thanks to the essayist, the president called for report of cases.

Dr. Parker reported an unusual case of azoturia. The horse belonged to the Haverhill Street Railroad Company, and had a day off for three years. He was taken sick at the end of a day's work, when he was on his last trip, about five miles from his stable, he was noticed to stumble once or twice; finally he came down unable to use his fore legs. The day was very stormy, sleet was falling and a nasty wind was blowing. The horse unfortunately had to lie on the wet snow in the storm for about

two hours, covered only by a couple of old sacks; finally he was put on a stone drag and hauled to a barn one half mile away.

He was suffering a good deal; the muscles of the shoulders were rigid; he was unable to use his fore legs; and his urine was dark and coffee-colored. The next morning, with the help of slings, he was placed on his feet, put on a sled, and taken home, where he died the following night.

Dr. Howard reported a somewhat similar case, where the horse had been working every day and had not been loafing. When seen he was unable to stand, and the urine had the characteristic dark color. He recollected three cases with paralysis forward, muscles of the shoulder hard and dark colored urine.

Dr. Blackwood has had several cases where the fore extremity had been affected. In these cases it is common to have atrophy of the muscles.

Dr. Marshall reported a case where the horse recovered from the first attack and for sometime afterwards he had periodical weekly attacks.

Some of the other members have had similar cases to those reported.

The discussion then turned on kicking mares and the effect produced by spaying and excision of the clitoris. Dr. Becket reported three cases in which he had excised the clitoris by making an incision round the base and sloughing off by common elastic band. He had good results in two of the cases mentioned.

The meeting then adjourned till next month.

JOHN M. PARKER, *Secretary*.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Medical Association was held at 19 Boylston Place, on Wednesday, February 28th, 1894, at 7.30 P.M. The members present were Drs. Becket, Bryden, Burr, Emerson, Howard, Labaw, Marshall, Osgood, Parker, Soule, Winchester, and Winslow. Honorary member, Dr. Stickney.

The minutes of the last meeting having been read and accepted, the report of the committee on tuberculosis was submitted.

The recommendation of the committee embraced the following points: 1st. That the March meeting be devoted to the consideration of the subject of tuberculosis.

2nd. If the previous recommendation be adopted by the association, that the members of the association invite any person interested in the subject of tuberculosis to be present.

3rd. That the association employ a stenographer for the evening of the March meeting.

4th. That the association pass a resolution putting themselves on record as recommending that, as bovine tuberculosis has been placed under the "Contagious Diseases of Animals" Act, we believe that certain forms of the disease in man should be so recognized.

The *first recommendation* that the March meeting be devoted to the discussion on the subject of "Tuberculosis," received a good deal of discussion. It was finally decided that the time before the March meeting was too short for the preparation of papers on such a subject, and it was thought best to delay the discussion till the month of May.

The *second recommendation* that members invite any person interested in tuberculosis to be present, was unanimously adopted.

The consideration of the third recommendation was postponed till later.

The *fourth recommendation* created a lively discussion; Drs. Bryden, Howard, Osgood, Winchester, and others taking part. Dr. Bryden objected to the passage of such a resolution on the ground that tuberculosis is neither so widespread nor so serious as has been represented. Finally Dr. Howard offered the following resolution which was seconded by Dr. Winchester.

Resolved; That as bovine tuberculosis is recognized by the "Contagious Diseases of Animals" Act as a contagious disease, in our opinion that, being due to the same germ, certain forms

of the disease in *man* should *also* be recognized by law as contagious.

After some further discussion the resolution was adopted with one dissenting vote.

Drs. Osgood, Burr and Parker were then appointed a committee to interview some of the well known physicians and pathologists with the object of getting them to read short papers on tuberculosis at the May meeting.

There being no further business, the meeting adjourned till further notice.

JOHN M. PARKER, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The first regular meeting of the Veterinary Medical Association of New York County, was held February 6th, 1894.

The meeting was called to order by the President, Dr. R. S. Huidekoper; upon roll-call the following members responded to their names, viz.: Drs. Amling, Becket, Bieser, Buckley, C. C. Cattanach, J. J. Cattanach, Dickson, Delaney, Ferster, Field, Giffen, Gill, Huidekoper, Jackson, Loomes, Liautard, Hickman, Hanson, Neher, O'Shea, Parkerson, Parsons, Robertson, Ryder, Richards, Sherwood, Sielman, Ferguson and Turner.

The minutes of the previous meeting were read and approved.

Dr. Huidekoper then stated that the society had mailed each member a list of the practitioners registered in New York County, and stated that the list contained the names of a number who have left the city and several who have died, he asked that each member correct the list as far as he knew, and return the same to the secretary in order that the association may know the exact number of practitioners and their residence in New York County.

The committee on Constitution and By-Laws, submitted to the meeting the Constitution and By-Laws as formulated by them, after which they were read section by section, and a

general discussion by the members followed, after a number of amendments were made and an extra section added they were adopted.

Moved by Dr. Giffen and seconded by Dr. O'Shea, that the president appoint the judiciary committee as adopted in the by-laws. Carried.

Moved by Dr. Liautard, and seconded by Dr. Hanson, that the committee on by-laws rewrite them as amended, and read them at the next meeting. Carried.

Moved by Dr. Liautard, and seconded by Dr. C. C. Cattach, that a committee of three be appointed by the president to select a draft for the certificates of the association, with wording adopted in the by-laws. Carried.

Moved by Dr. Ferster and seconded by Dr. Liautard, that the judiciary committee consider plans for incorporation and report at the next meeting. Carried.

Moved by Dr. Gill and seconded by Dr. Field that a vote of thanks be extended to Dr. Hanson for his efforts in causing the dissolution of another society, and recommending them to join this association. Carried.

Moved by Dr. Gill, and seconded by Dr. O'Shea that the committee on conference be dissolved with thanks. Carried.

The president then announced the following committees: Judiciary, Dr. Giffen, Chairman; Drs. Buckley, Ryder, Turner, O'Shea, Certificate's; Dr. Liautard, Chairman; Drs. Sherwood and Becket.

The meeting adjourned.

J. ELMER RYDER, D.V.S., *Secretary*.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The Nineteenth Annual Meeting of the Alumni Association of the American Veterinary College, was held in the lecture room of the college building, March 20th, at 11 A.M.

Among other things were a number of reports from various

State Secretaries, which were very interesting, containing much data regarding the workings of the veterinary profession in the relative States, including the laws, diseases most prevalent, the number of veterinarians in the State, their positions, etc., etc.

After the transaction of business, the election of officers for the ensuing year took place. The following were duly elected: President, Dr. H. D. Hanson, of New York; Vice-president, Dr. E. B. Ackerman, of Brooklyn; Secretary, Dr. J. B. Hopper, of Ridgewood, N. J.; Treasurer, Dr. W. V. Bieser, of New York; Librarian, Dr. G. W. Meyers, of New York.

The meeting then adjourned.

In the evening the commencement exercises were held at Chickering Hall, after which the members of the faculty and alumni proceeded to Zangheri's on 22d Street, near Broadway, to attend the banquet, which was a grand success, both to the inner man and socially. After various toasts from members of the faculty, the graduating class and representatives of various other classes, the party disbanded, all promising (as far as possible) to attend the dinner next year.

J. B. HOPPER, D.V.S., *Secretary*.

SOCIETY OF VETERINARY GRADUATES.

The fourth annual meeting of the Society of Veterinary Graduates of Wisconsin was held at the City Hall in Madison, Wednesday, March 8th, at 1.30 P.M. President E. D. Roberts, of Janesville, in the chair.

Roll-call showed twelve members present, namely: Drs. E. D. Roberts, Ormond, Leech, Roub, Kelso, Woodford, Laus, Unertt, Schmitt, Culdham, Newton, and Dave Roberts.

The following visitors were present: Drs. Clark, Morgenuroth, Binger.

Minutes of the last meeting read and adopted.

The annual report of the secretary and treasurer read and adopted.

Under the head of unfinished business the code of ethics read at the last meeting was adopted and ordered printed.

Moved and seconded that resolutions be drawn up by a committee composed of Drs. Leech, Ormond and Laws, asking that some action be taken by the State Board of Health toward the extermination of "tuberculosis" on the dairy herds throughout the State.

Committee was given until evening to draft same.

Moved by Dr. Ormond and seconded by Dr. Schmitt, to condemn the action of the State Veterinarian in regard to the manner of handling and exterminating glanders throughout the State.

Adopted on motion of Dr. Laws and seconded by Dr. Woodford, that the committee on legislation were authorized to frame a bill to be presented at the next meeting of the legislature to regulate the practice of veterinary surgery in the State.

Discussions were then taken upon the subject of tuberculosis, and some of the experiments being made at the State University, were presented by Dr. W. G. Clark.

Moved and seconded that the society of Veterinary Graduates does not recognize the diploma of Dr. F. J. Toussaint. Adopted.

Moved by Dr. Woodford and seconded by Dr. Unertt, that members shall report all persons eligible to membership to the secretary, also all deaths and removals from their vicinity; they shall also report all cases of contagious and infective diseases in their midst or coming to their notice. Adopted.

The report of the secretary as delegate to the United States Veterinary Medical Society was read and adopted.

The next order of business was the election of officers for the ensuing year and resulted as follows: President, C. D. Woodford, Madison; Vice-president, J. F. Roub, Monroe; Secretary, G. Ed. Leech, Milwaukee; Treasurer, C. H. Ormond, Milwaukee; Censors, Jno. F. Unertt, Milwaukee; David Culdham, Stoughton; E. H. Newton, Waupaun.

On motion the meeting adjourned to meet at 7 P.M.

EVENING SESSION.

Meeting called to order with Dr. Woodford in the chair.

Under the head of new business the subject of issuing a new certificate of membership to all active members was discussed and ordered issued and printed.

The selection of a suitable coat of arms to be used by the society and also to be placed on the new certificates, was left to a committee of three, composed of Drs. Leech, Ormond and Unertt.

There was a lively discussion in regard to fixing a schedule of prices, but no definite action taken thereon.

There were four names presented for membership, and being reported on favorably by the censors, were declared elected, namely: Drs. W. G. Clark, E. L. Morgenwroth, S. S. Binger and Gus Brauchle.

Dr. Roub then read a paper on "Fistulous Withers," which brought out a general discussion and was followed by a paper on "Laryngitis" by Dr. Laws, the discussion being entered into heartily by the members, after which the committee on "Tuberculosis," submitted the following report:

Whereas, The Society of the Veterinary Graduates of Wisconsin recognizing the fact that the time has come that some action should be taken in regard to the extermination of the disease "Tuberculosis," which is infecting the dairy herds of this State, thereby carrying the disease through the meat and milk to the human family. Therefore be it

Resolved, That this Society, through the legislative committee, recommend some bill to be acted on by the next session of the legislature for the eradication of this disease from these herds in the interest of public health, and be it also

Resolved, That this Society endorse the efforts of the United States Society to get Federal legislation on this subject.

Submitted and adopted, it was decided by a vote of 5 to 6 to hold the next meeting in Madison, Wednesday, August 1st, 1894.

Essayists appointed for the next meeting were Drs. E. D. Roberts, W. G. Clark and D. Culdham.

Dr. Roub reported a case of hydro-metric amnion in a cow,

from which he drew thirty gallons of aquæous fluid, giving relief from apparent distress with no foetus present.

There being no further business to come before the meeting it was adjourned to August 1st, 1894.

G. ED. LEECH, *Secretary*.

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The eleventh quarterly meeting of Western Iowa Veterinary Medical Association was held in the office of the President, Dr. G. C. Johnson, Sioux City, Ia., Tuesday evening April 10th, 1894.

Although the attendance was small, interest was not lacking among the members present.

Among other matters considered under the head of routine business, the committee on legislation reported the failure of the committee on legislation of the State Association to secure the passage of its bill, or the one introduced by representative Sawyer.

It was the opinion of the committee that two factions entered into the defeat of the bill. The first was the failure of the State Association Committee to have a meeting at Des Moines while the legislature was in session, and secondly to the indifference of many members of the profession throughout the State.

The committee urged a better attendance of the association meeting and a more united effort in the future.

The discussion following this report was quite lengthy and animated.

It was decided that the assessment of \$1.00 from each member of the association, declared at the last meeting, January 31st, 1894, to defray expense of the legislative committee, and not used, should be turned into the treasury for future use, and that all members who had not paid same, he was to notify to do so at once.

Under head of papers, report of cases, etc., Dr. F. P. Gaunt, of Akron, Ia., reported two cases of cystic obstruction.

In the first case the Dr. operated as follows: Injected cocaine at the ischial arch of the urethra, then passed a catheter, cut down on same and then withdrew it, and by means a placenta

(human) forceps, succeeded in drawing away about one pint of sebaceous matter which very closely resembled that found in the sheath of a healthy horse.

After having removed all the solid matter, washed out bladder with solution of creoline, and closed wound with two interrupted sutures.

Case made a very satisfactory recovery. Question, what caused an accumulation of this character?

Second case, presenting similar symptoms, proved on examination to be suffering from enlargement of prostate glands. Case made good recovery under pot. iodide treatment. Dr. J. I. Gibson, of Denison, Ia., reported a case of uterine torsion in a cow which he relieved by roping the cow, and with his hand introduced into the uterus as far as possible, he held it from turning while assistants rolled the cow same direction as the torsion, by this means the torsion was reduced and the cow delivered of a live calf.

The object of rolling the cow in same direction as the torsion, is to have the cow catch up with the uterus so to speak. Complete report of this case will be sent you in near future.

Dr. G. A. Johnson reported a case of puncture of perineum of a mare in foal, that extended along the side of and partially under the vagina and bladder into the abdominal cavity.

The wound was large enough to permit the hand to be passed into the abdominal cavity.

Case made a satisfactory recovery. All report of cases was fully discussed.

It was decided to hold the next meeting of the association in this city some time during the early part of July.

J. I. GIBSON, *Secretary pro tem.*

Per G. A. J.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The Tenth Annual Meeting of the Veterinary Medical Association of New Jersey was held at the State Street House, April 12th, 1894.

Meeting called to order at 11.30 A.M. by the President; the following doctors answered to the roll-call: W. B. Miller, J. W. Hawk, J. C. Dustan, A. Brown, J. C. Higgins, B. F. King, W. Runge, R. O. Hasbrouck, S. Lockwood, J. Gerth, Jr.; J. M. Everitt, M. M. Stage, E. Britton, B. L. Drummond and I. Kilburn; the delegates from Pennsylvania State Veterinary Medical Association, Dr. Horace Hoskins, Prof. Leonard Pearson; New Jersey Medical Association; Dr. J. W. Stickler, M.D., and A. Van Nest Baldwin, M.D.

Visitors, Dr. Harker, of Trenton, and Mr. Geo. Fetter, student from National College, Washington, D. C. Minutes of previous meeting read and approved. The president's address was of a practical nature and was the key-note to our future success as veterinarians.

The secretary then reported the death of one of our members, Dr. O. C. Eisenhart, of Asbury, Warren County, N. J., on February 1st, 1894. The president appointed Drs. Dustan, Brown and King a committee to draft suitable resolutions, and forward a copy of same to relatives of deceased, also to drape a chair for this meeting. The secretary reported only 25 active members. The treasurer reported a balance in hand of \$38.74. Dr. Drummond then read a report of some cases of lead poisoning in cows. Dinner being ready, adjourned at one o'clock.

2.15 P.M. meeting reconvened, Dr. Higgins moved to suspend the order of business and listen to the reading of the Legislative Bill as the committee reported the same completed. Carried. Dr. Baldwin then read the bill, which was approved by the association. Dr. Baldwin then read Assembly Bill 363, being a bill relative to Tuberculosis, and now before the Assembly. Dr. Hawk moved that this meeting disapprove this bill, and that the president and secretary notify the State Board of Agriculture of the same. Carried. Dr. Hoskins then spoke of the veterinary bill and congratulated not only the association but the people of the State in having men who were trying to benefit the masses of the people by trying to eradicate this dread disease, "Tuberculosis," from our State; he was followed by Dr. Stickler and

Dr. Miller. A vote of thanks was then tendered the joint committees and Drs. Stickler and Baldwin especially for their efforts in getting the bill ready for this meeting.

Election of officers resulted as follows: President, Dr. W. B. E. Miller, Camden, N. J.; 1st Vice-president, Dr. J. C. Higgins, Bound Brook, N. J.; 2nd Vice-president Dr. E. Britton, Long Branch, N. J.; Secretary, Dr. S. Lockwood, Woodbridge, N. J.; Treasurer, Dr. B. F. King, Little Silver, N. J.; Trustees, Drs. J. W. Hawk, J. C. Dustan, R. O. Hasbrouck, W. Runge and A. Brown.

Dr. J. W. Stickler, M.D. and Dr. A. Van Nest Baldwin, M.D. were elected honorary members of this association.

Dr. Hawk then spoke on Cold Storage, a system which he condemned as at present conducted.

Dr. Runge spoke on the same subject. The methods by which fish and meat are kept so long a time was something new to most of the members. The president appointed Drs. Hawk, Runge and Dustan a committee to investigate the subject and report at next meeting. Dr. Dustan then read a paper on the advancement of veterinary science. The president appointed for essayists, Drs. E. Britton, J. C. Higgins, J. Gerth, Jr., and W. Runge, and delegates to the Pennsylvania State Veterinary Association, delegates to the New York State Veterinary Association, delegates to the New York County Association.

The legislative bill pertaining to the eradication of Tuberculosis was introduced in the Assembly at 4 o'clock. The meeting adjourned at 4.30 to meet on the second Thursday in August, 1894, in Newark, N. J.

S. LOCKWOOD, *Secretary*.

The suit of Dr. Amick against the St. Louis Clinique and Faculty of the College of Physicians and Surgeons of St. Louis, has been decided in favor of the plaintiff.—*Am. Med. Journal*.

AMERICAN VETERINARY REVIEW,

JULY, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

DISHORNING IN CATTLE.—This is another important question amongst those operations of veterinary surgery, which it has been customary to classify among those known as “fashionable” operations. The important part being the action which has been taken in some parts of the country in obtaining legislative action to prevent the performance of the operation.

There are several so-called operations of fashion which in the opinion of many are justifiable in the sense of rendering the domestic animals upon which they are performed more useful, better adapted to its services to mankind or more productive in their respective qualities and again less dangerous to themselves.

It is not our object to consider the propriety or the unjustification of these manipulations, and in fact, practically speaking, our experience on the subject of dishorning is too limited to express an opinion, but we have received a letter from one of our correspondents which no doubt will throw a certain amount of light on the subject of no little advantage.

The letter reads as follows :

DEAR DOCTOR:

I write you to ask whether there be a law against dishorning cattle or not. I have dishorned some two hundred or so, this last season. The first lot, fourteen in number, I was very careful to see if there were any bad results or not. I took the temperature before operating and for two days after, and found at no time the slightest rise. The milk was carefully weighed before and after, they never lost a feed, and at no time indicated in any way pain in their heads. I am very favorably impressed with the operation as it entirely changes their disposition, there is no chasing or goring when let loose in yard, and they herd together like a flock of sheep. I use the

"Keystone Dishorning Clipper," which makes a very quick, clean cut, (cutting from four sides) the wound heals very quickly with but little suppuration. I find quite a percentage of my cases of "Garget" caused from being hooked behind.

I find no one that has had his herd dishorned, that would willingly allow a cow with horns on in his yard again. With good help I can readily take off 75 cows per hour. They thrive better, put on more flesh, and give a larger flow of milk, simply because they are more quiet.

Yours very respectfully,
F. T., D.V.S.

McKILLIP VETERINARY COLLEGE.—We have received from the dean of the above-named institution the following, with request to insert:

The following chairs in the faculty of the McKillip Veterinary College at Chicago have not been filled, and remain open to competition, namely: Physiology, Materia Medica, Surgery, Hygiene, and Meat and Milk Inspection.

Gentlemen who have had experience in teaching these branches, or who consider themselves able to do so, are invited to send their application, which must be accompanied by a curriculum vitæ, written by the applicant, together with the compensation asked. Only such persons who are eligible to membership in the United States Veterinary Medical Association need apply.

Applications must be sent to

OLOF SCHWARZKOPF,
Dean of the Faculty,
No. 1639 Wabash Ave.,
Chicago, Ill.

This means a good step in the organization of the new school, and our friend Dean Schwarzkopf knows how to secure his assistants in the faculty board. Let us hope, however, that he will not be obliged to ignore the recommendations of the paper on "Veterinary Education," and that, on the contrary, he will take advantage of the brilliant opportunity offered him. Already experienced teachers will do; but belief on one's self-ability to teach ought not to be sufficient. The vacant chairs of the McKillip Veterinary College remain open to competition, says the notice, and we feel highly gratified by this action, which will record the new school as being the *first* among medical or veterinary institutions where professorship will mean a great deal more than that of other colleges—more than an appointment through friendship, ambitious desire or, perhaps, "pecuniary bargain."

ORIGINAL ARTICLES.

THE DOSE OF TUBERCULIN.

BY GEORGE A. KINNELL, M.R.C.V.S., Pittsfield, Mass.

A paper read before the Massachusetts Veterinary Medical Association.

Through the medium of your columns I wish to add my testimony as to the great value of tuberculin as a diagnostic agent in the detection of tuberculosis among the bovine species.

But, as in the matter of dosage, my experience has differed somewhat from that of other observers who have recorded their observations, I take the liberty of going into details.

As far as I can find out, those veterinarians who use tuberculin do so in doses of from one to three drops for a mature cow; the most common dose being from two to three drops.

Now, in my practice I have used, with the most gratifying results, a maximum dose of two-thirds of a minim; for yearling creatures I use one-third of a minim; for mature animals of small size or low condition I use from one-half to two-thirds of a minim.

What have been the results?

By this system I have been enabled to detect the presence of tuberculosis in all its stages from the earliest to the most advanced.

The most marked reaction I have met with, an elevation of 6 2-5 degrees, was got out of a large-sized Jersey cow. The post-mortem examination revealed a few lesions on the surface of the spleen, but so far as microscopic examination could detect the lungs and all the other organs were entirely free from tubercular lesions. Again I have got elevations of 3, 4 and 5 degrees in animals which were afterwards found to have tubercular lesions in the most advanced and aggravated forms.

Others, again, have shown one or two tubercular nodules not larger than a hazelnut.

While I am thoroughly convinced that a large dose has no advantage whatever over a small one, I am, on the contrary, of

the opinion that a small dose, such as I use, is preferable to larger doses, and will give more certain results.

Three weeks ago I had occasion to test a herd which had been tested by another practitioner last February. I understand the dose of tuberculin he used was two drops and a half. A number of the animals gave the reaction indicative of tuberculosis, were condemned by him and, on post-mortem examination, the correctness of his diagnosis was fully verified. There were eleven animals, however, which did not give the reaction, and were passed as sound. These eleven creatures were tested by me three weeks ago with my maximum dose of two-thirds of a minim, and of the eleven animals four gave reactions of from 2 to 4 degrees.

I slaughtered the animals next day, and found them in advanced tuberculosis. In one of them the bronchial lymphatic glands were enormously enlarged, containing large quantities of liquid and caseous pus. The second cow was not so badly affected, but showed extensive lung lesions. The third cow was still less diseased, having in her right lung a caseous tubercular mass as large as my fist, while the fourth cow had at the upper part of her right lung a solitary nodule about the size of a hazelnut. The latter animal, I thought, might have become affected subsequent to the original test.

Can it be that a small dose is more reliable than a large one? or did the the tuberculin first injected aggravate the trouble and in some way render the system more susceptible to a second test.

To sum up my conclusions:

First.—The dose of tuberculin ordinarily used is unnecessarily large.

Second.—A dose of two-thirds of a minim is at least sufficient.

Third.—A small dose may be more certain and more reliable than a large one.

In condemning animals, I followed the usual rule that an elevation of 2 degrees indicates the presence of tuberculosis.

The tuberculin used was that manufactured by Koch and

imported by Schulze, Berge & Koechl of New York. This was diluted with a 1% solution of carbolic acid in distilled water. My prescription for, say nine mature cows, is as follows:

R Tuberculin, six minims.

Carbolic solution, eighty-four minims.

Dose of the above, ten minims.

I inject the agent under the skin of the creature's neck. the skin is looser here, thinner and more easily pierced; besides the operator can stand further from the cow's hind foot.

Would it not be as well if observers, in speaking of the quantities they use, express themselves in minims and drachms instead of using measures of the metric system? They would be more readily understood by forty-nine out of every fifty veterinarians, and besides would be after all only using the standard in general use in the country.

FUSION OF TEMPORARY INFERIOR MOLARS WITH INFERIOR MAXILLA IN THE HORSE.

BY PROF. W. L. WILLIAMS, D.V.S.

In a previous paper* the abnormal adhesion of temporary teeth was suggested as a possible factor in producing aberrations in the development of permanent teeth.

Not long after contributing the article cited, a case presented itself which was quite unique, and although odontomes did not result in so far as aberration in the disposition of dental tissues were concerned, effects of an equally profound character were produced which go far to demonstrate that these abnormally adhesive temporary crowns may and do cause odontomes in some cases.

The patient was a medium sized, well-formed grade French draft gelding but three years. He had been worked for some months in a coal wagon, and when presented for treatment was in poor condition, because of the pathological conditions rather than of excessive labor.

* A Clinical Study of Odontomes.—AM. VET. REVIEW, Vol. XV., No. 1.

Two spherical tumors presented one on either ramus of inferior maxilla, each about four or five inches in diameter, centering in alveolar cavity, at position of second pre-molar. The tumors were hard, evidently of bone, and were painful to touch. Mastication was imperfect, painful and accompanied by frequent quidding.

Exploration of tooth crowns revealed nothing noteworthy.

The tumors were freely trephined at about their center, and in one of these there was found some pus, containing particles of food.

In both tumors apparently healthy tooth tissue was encountered, which, after clearing away the investing bone so that a clear view could be had, proved to be healthy, naturally-formed molars, disposed almost longitudinally in relation to inferior maxilla, the fang pointing forwards and slightly declined, the crown backwards, slightly ascending.

The viciously-disposed teeth, after comminution with chisel and mallet, were removed, when the temporary crowns were found still undisturbed projecting into the mouth. Water could be thrown through trephine opening into mouth, and to insure recovery the removal of temporary crowns was determined upon, and the tumor cavity, extending up against these, it was presumed that a slight tap on the punch from below would promptly send the persistent crowns into the mouth. In this, however, we were promptly disappointed, and only succeeded in dislodging the crowns after some quite hard hammering.

When the crowns finally came away, and were examined, it was found that the alveolar processes had in part come away with them, there being perfect fusion between crown and alveolus, so intimately blending as to render it impossible, with the naked eye, to say where the one ceased and the other began. The case made a slow but complete recovery.

It seems fair to conclude that adhesions of a much less degree might, by infringing upon the rapidly forming permanent tooth, cause aberrations in its structural growth, and thus lead to the formation of well marked odontomes.

SURGICAL TREATMENT OF THE DISEASES OF THE HOCK JOINT.

BY PROF. W. L. ZUILL, M.D., D.V.S., Philadelphia, Pa.

A paper read before the Pennsylvania State Veterinary Medical Association.

In presenting this subject for the consideration of this body of veterinarians representing the Profession in Pennsylvania, it will no doubt be in order to offer an apology for having the assurance to bring before you such a threadbare subject. It is not my object to offer you any new theories, but rather a new application of old ones, and the result obtained by a work-a-day veterinarian.

The statistics which I give, have been compiled entirely from my own case book, from the first of January 1890 to the end of December 1893, and embraces only those operations done in private practice, excluding entirely my hospital work for those years. There are also statistics obtained from a few practicing veterinarians, with the results obtained by them, and which contain some very valuable information.

Acute Spavin.—Before entering upon a detailed consideration of our subject, we will first hurriedly review the different forms of lameness in the tibio-tarsal articulation. The first group of lamenesses to which I shall call your attention, are those usually considered under the comprehensive term of *Acute Spavin*. Under this heading we have several distinct, and well defined lesions, all of which either entirely suspend the functions of the joint, or very greatly impair its usefulness. We may divide them into five distinct groups: Traumatism, Lesions of the Tendinous Structures, Lesions of Synovial Membranes, Lesions of the Periosteum and Ligaments, and Lesions of the Bones. These lesions may exist separately, or two or more groups may coexist in the same articulation. The lameness which results from a Traumatism is unmistakable. It is of an intense character, the function of the limb is entirely suspended, locally there is an intense inflammatory swelling, hot and painful to the touch. In some instances this lesion will make a good recovery under ordinary treatment, but the majority of cases will run into

the sub-acute form, leaving all the structures of the hock thickened, indurated and inflamed, with marked impairment of its function. The bones of the articulation are the seat of an active inflammatory process, which comprises the articular cartilage, and the synovial membrane, making it impossible for the animal to carry weight comfortably upon the injured extremity; and is of itself sufficient cause for lameness. The *periosteum* is thickened and inflamed, sore and sensitive; the ligaments and tendons attached to it functionally aggravate the lesion and intensify the lameness. The *Cunean tendon* of the flexor metatarsi is also compromised in this lesion; it is found indurated and vascularized, often to such an extensive degree, that it loses its tendinous character; its white glistening appearance is changed, and a red vascular structure takes its place. Associated with this is an inflammatory transudation, into the tendinous synovial bursa with vascularization of its walls, and hypertrophy of its fringes. Either of these lesions are sufficient to produce an intense lameness with symptoms and history of acute spavin. These traumatic complications of the hock joint can easily be diagnosed, because of the fact that they are always associated with a diffused induration of the entire articulation.

Given a case of hock lameness, however, with symptoms and history of acute spavin without the diffused swelling and induration, and it will always be found to have arisen from other causes than traumatism.

Lesions of the Tendon.—That form of acute spavin due to localized lesion of the *cunean tendon* can always be easily diagnosed from other acute lameness of the hock. The lameness is very intense, the animal stands in the stall with the leg flexed well up to the belly, and it is difficult to make him carry any weight upon it; but after going some distance upon three legs he may lightly touch the toe to the ground. By elevating the front foot on the lame side the animal is compelled to place the lame leg upon the ground in order to maintain his balance, then a digital examination can be made. The abnormal heat of the parts is limited to the region occupied by the tendon, which can

be distinctly outlined owing to an increase in its size, and is extremely sensitive to pressure.

With such clinical symptoms it is not possible to make any other diagnosis than that of sprain of the cunean tendon. We must at the same time bear in mind the fact that this lameness does not improve on exercise, but continues to grow worse with every mile travelled, and with every additional days labor performed; neither does he rest out of his lameness, in any reasonable number of days or weeks.

Lesions of the Synovial.—It goes without saying that those causes which contribute to lesions in the tendinous structures also tend to compromise its synovial sheath; but it is by no means rare to find a synovial complication without an injury to the tendon. When the synovial lesion exists alone, or is but slightly complicated, the diagnosis is easily made. The rational and local symptoms are those of acute synovitis; the swelling on the face of the joint has a puffy, fluctuating character, and extends along the borders of the tendon. This is much more evident when the foot is raised from the ground. The hard, elongated tumor along the course of the tendon, which may have been mistaken for bone spavin, is now soft and fluctuating, which confirms the diagnosis. The lameness in this complication is not so intense as that associated with lesion of the tendon; it varies but slightly under the influence of work or rest, and the animal travels with the articulation more or less flexed and the extremity carried well forward.

Lesions of the Articular Ligaments and Periosteum.—Acute spavin from lesions of this character, are perhaps, the most common, and often give rise to the most serious consequences; especially if treated by a timid surgeon. It is in injuries of this character that common bone spavin has its origin, and we may each ask ourselves these questions: Have I not in many cases contributed to the formation of spavin by the injudicious application of fire and blister? Have I not had many cases of acute lameness of the hock joint grow worse and worse, and the calcareous deposit become greater and greater after each repeated

blister, and after each application of the fire? Have I not treated many cases of hock lameness which were unsatisfactory to the owner and mortifying to myself? I can answer these questions by saying that I have had a number of such experiences. The diagnostic symptom presented by this form of hock disease is that which is familiar to all of us. The animal goes upon his toes and warms out of his lameness after going a certain distance, but which again appears after a short rest, and may be again described as regularly intermittent. This is the only form of spavin lameness on exercise, even in its most acute stage; but prolonged exercise will aggravate the condition.

Lesions of the Bones.—It frequently happens that there are lesions of the cuneiform bones, with consequent absorption of the articular cartilage, and ulceration of those surfaces, the lameness associated with it is entirely different from that which we usually consider belongs to this articulation. It is simply that of an ulcerative arthritis. It is not a very marked lameness, and in many instances hardly sufficient to take the animal off his work. It is very persistent in character, it does not improve on exercise or get worse on work, neither does prolonged rest greatly benefit the condition. The shoe is often worn as well on the lame side as on the sound side; the owner will always think that he has a case of rheumatism, and the veterinarian not infrequently fails to make a diagnosis. When the two lesions exist in the same hock, that is, an interarticular spavin associated with a diffused periostitis, with more or less calcareous deposit; then the lameness is a mixture of the two diametrically opposite groups of symptoms, that I have shown belong to these lesions when they exist alone. Under these circumstances we will probably experience the most difficulty in making a diagnosis. It is only after carefully weighing the history and comparing it with the clinical symptoms of the case, and excluding every other disease that may compromise this articulation, that we are able to reach a direct diagnosis.

Having thus far briefly and hurriedly reviewed the conditions presented by the various forms of acute or sub-acute hock lame-

ness is that produced by a mechanical interference with the function of the tendon, due to the presence of the bone tumor. In this case the animal may not warm entirely out of his lameness, but will improve on exercise. In addition to the bone tumor as a cause of lameness in chronic spavin, we may have an ulceration of the articular surface of the true hock joint, or the tibio-astragaloid articulation. With such a complication the lameness is permanent, persistent and continuous; the lameness is more severe than in what is known as inter-articular spavin, or arthritis of the cuneiform bones. The continuous severe lameness, with marked atrophy of the muscles of the croup, should enable us to make a diagnosis of this probable complication, and permit us to avoid the mortification of failure, which would be the inevitable result of an attempt at treatment.

This hurried and imperfect review of the different varieties of spavin lameness and lesions which cause them, brings us up to a consideration of the causes producing these lesions.

Causes.—In a general way it may be said that any cause capable of producing an inflammation of the bones or other tissues of the hock may be the cause of spavin. These causes may act as forcibly on the articular surface of the bones as on the external or periosteal surface. The pressure sustained by the hock joint increases in proportion to a diminution of its width. When the hock is narrow, thin and clean, the cuneiform bones must sustain more weight to the given surface area than when the hock is full, wide and well developed; from which it is seen that a narrow hock especially predisposes to inter-articular spavin. Certain kinds of work also predispose to this condition; animals used for running, jumping and saddle work generally are more prone to develop this disease, because in galloping the posterior extremity with which he leads carries the entire weight of the horse and rider at a certain period of the pace. Spavins developed under such an influence must be essentially articular, an arthritis always developing before the appearance of a bone tumor.

A narrow hock, by the action of an entirely different mechan-

ism also predisposes to bone spavins. An animal driven at any speed whatever places his foot upon an inequality of the pavement, which gives it an inward or outward inclination, thus tending to throw the body in an opposite direction. Between these two forces there is a tendency to flexion of the hock joint from side to side (an impossible normal movement), which is resisted entirely by the lateral ligaments of the joint, frequently resulting in laceration of the fibres and rupture of their periosteal attachments.

In this case the power is the weight of the body, the point of resistance is the hock. Under such conditions the resistance offered to this force is lessened in proportion as the short arm of the lever is reduced by narrowing the hock. On the other hand, the resistive power increases rapidly and in direct ratio to the increased width of the articular surfaces. The ligamentous structures of the joint are less apt to be injured than the bone to which it is attached; hence it follows that these injuries will result in an inflammation of the bone, the deposit of lime salt, and the formation of an exostosis, which if on the inner side of the joint, is called bone spavin.

These two forms of spavin, the inter-articular and the bone spavin, often exist in the same joint, and may mechanically interfere with the function of the articulation of the astragalus, with the cuboid and scaphoid; or these with the two cuneiforms, or they in turn with the metatarsal bones. Muscular effort of any kind superinduces lesions of the tendon of the flexor metatarsi or its attachment on the small cuneiform and head of the internal rudimentary metatarsal. Its synovial sheath is compromised by the same class of causes.

One very important point to be considered is the *hereditary predisposition* in this group of diseases. When a mare, or horse, with spavin is used for breeding purposes, the progeny will inherit the weakness of its parents; that is to say, hock joints deficient in their development and therefore prone to these diseases. Such animals should never be used for stock purposes. It is my opinion that animals with defective or deficient hocks should not

be considered sound for any purpose, no matter how free they may apparently be from actual disease.

Treatment.—Diseases of the hock joint are no exception to the rule that specifics multiply in proportion as the disease is difficult to cure. How many dozens of patent and proprietary preparations can we not find in the market guaranteed to cure spavin in forty-eight hours? We have used every variety of blistering agent that could be devised, and with how much success? My experience teaches me that there is little value or advantage to be derived from the application of a blister in any form of spavin. In fact in every instance, have I been impressed with the fact that it did harm. If we review every form of acute and sub-acute spavin, bearing in mind the pathological condition with which we must contend, will it be possible for us to find a single indication for blister? All of the conditions present at the time would be greatly aggravated by counter-irritation. The theory of the action of counter-irritation is a very pretty one and a very plausible one, but in practice all those pretty theories fail, and after a few experiences of this kind, if we are not able to recognize cause and effect, we will soon find our pretty little craft in which we set sail from our Alma Mater wallowing in the trough of a very ugly sea.

I have never found blistering agents of any value in the treatment of diseases of the hock. I make this broad statement because in my entire fifteen years' acquaintance with the veterinary profession I have never once seen any good results from its use, but in many instances harm was clearly demonstrated; and my experiences in this respect comes down to 1894.

The use of the actual cautery is a means of treating spavins advised by all writers on this subject, and recommended by all practitioners. The one reason why this treatment is so unanimously recommended by the profession is due to the fact that nearly all of us feel that this is the last resource left to us, and that with it we reach the end of our string. When we have been driven into this last ditch we endeavor to hedge ourselves by giving our client a learned discussion on the physiological

action of firing, and leave the back door open by saying it may be necessary to fire three, four or more times before we remove the lameness; while in our inner conscience, we feel certain that before this stage is reached, the owner of the animal will become tired of the treatment and give the beast away. One of my friends, who I do not hesitate to say is one of the best practitioners in Philadelphia, is honest enough to advise his clients in this way rather than undertake the treatment of spavin. To quote from a letter received from him a few days ago, he says, "I generally try to talk my clients into selling these animals and buying better ones." I will show later on that this advice is not good, because he has had seventy-five per cent. of cures in his practice, and his failures have been in horses over twenty years old.

Firing for spavin lameness, whether in lines or points, superficial or deep, has never in my hands given any good results, and in very many instances has made the animal much worse than he otherwise would have been. Firing a horse for spavin has never brought me a single friend or client, but has caused me to lose many good ones.

All writers on this subject end their discourse on treatment with this advice,—“After the animal has been fired a number of times and does not get well of his lameness, you may then make section of the cunean tendon of the flexer metatarsi.” This is the worst possible advice either to give or follow, because no horse has ever been cured by section of the cunean tendon after deep and repeated fire. If the fire has been so light as to cause little or no induration of the tissues; good may follow, but it will entirely depend upon the structural changes brought about by the cautery.

Resection of the Cunean Tendon.—The pernicious results of firing forced upon my notice in many instances, together with an entire absence of anything justifying the operation, induced me to abandon it five or six years ago. Since that time I have treated all my cases of spavin lameness by a re-section of cunean tendon of the flexor metatarsi; This operation has been applied in all forms of hock lameness, except the very acute form and

the results which I have obtained are sufficient, in my opinion, to justify continuation in this line of treatment.

If any other treatment can be shown to be as good, as the worst that can be said of *resection*, I am ready to endorse it. On the other hand, it can be said of *resection*; there are no advantages to be obtained from any other treatment, that does not hold good with *resection*. On the other hand, it can be said that the disadvantages chargeable to this operation will apply with ten times greater force to firing, blistering and other forms of counter-irritation. I do not come before you gentlemen with nothing but empty theories, but to present you with clinical facts based upon statistics obtained from my own case book of private practice, not hospital work, as the cases here when once operated upon are usually lost sight of, and from the practice of a few of my friends who are kind enough to prepare them for me.

The statistics show sixty five (65) operations in my own practice since January 1890, and are as follows;

S. Manuf. Co.,	2	T. Brock,	2
Brown & McM.,	2	A. Shock,	1
N. Gravis,	1	I. Griffin,	1
I. Moore,	2	M. Ferris,	2
W. Levy,	1	I. Sharp,	1 not cured.
Dr. Ely,	1	T. Fenton M.D.,	1
L. Godfrey,	4	A. Thomas,	1 after 3 fires not cured.
M. Einstein,	1	S. M. Water Co.,	1 not cured.
I. Austin,	1	Mr. Mann,	2
T. Skelly,	2 (?)	J. Jamison,	4
Y. Wimig,	2 not cured	Mr. Patrie,	2
Vienna Yeast Co.,	4	Mr. Veget,	2
B. L.,	2	Mr. Drummond,	1
S. & T.,	2	I. & P. B. Brewing Co.,	16
I. Walker,	1 (?)		

This shows a total number of eight not cured, in which I have included three questionable. When arranged on a per cent. basis, it will be seen that eighty-eight per cent (88%) were cured completely, four and a half (4½) improved, and seven and a half (7½) not cured. From communications which I have received from practitioners in Philadelphia and vicinity, I find that they have obtained a percentage of cures in some instances

much better than my own, while some have fallen as low as seventy-five per cent. (75%) of cures. In my own case, the first twelve operations show one hundred per cent. (100%) entirely cured, while the first sixteen (16) only give seventy-five per cent. (75%) successful. This tends to show that we cannot base conclusions upon a small number of operations, and the larger the number of cases the more nearly will be obtained correct results. In addition to those, I have twenty-six operations made by other practitioners, eight by Dr. C. H. Magill, six by Dr. Charles Williams and twelve by Dr. Thos. B. Rogers; out of this number six were not cured, and I consider the patient not cured if he is lame two months after the operation; this gives us a total of ninety-one operations with fifteen per cent. (15%) of failures; this percentage may appear to be large, but much of it is due to experimental operations on old horses over twenty, which should not have been included in statistics of operations done in actual practice. If those experimental operations are excluded, it will bring the total percentage of cures up to what I have obtained in my own practice, that is eighty-eight per cent. (88%).

Operative Procedure—Anatomy. I shall only dwell upon the surgical anatomy of the hock, sufficiently long to call your attention to the most important and essential points. The outlines of this internal face may be said to represent an irregular tetragon, the supero-anterior angle of which is formed by the internal tuberosity of the tibia, the postero-inferior angle formed by the head of the internal rudimentary metatarsal bone. These two points are the land marks which guide us in making our incision which is upon the inferior third of an imaginary line drawn from one to the other. The skin of this region is quite thick and vascular, producing quite a hæmorrhage during the operation, which principally comes from an arteriol in the deeper portions of the cutaneous structures. The next layer of tissue is composed of quite loose connective tissue, immediately beneath which we find a layer of dense fibrous structure which is portion of the tibial fascia. This structure must be cut through in order to expose the tendon and to which it is more or less intimately united.

Aseptic Precautions.—Everything must be done in order to secure a wound as nearly aseptic as possible. The hair should be clipped or shaved from the seat of operation and the skin thoroughly scrubbed with a brush, hot water and soap, and rubbed dry with a clean rubbing cloth, then bathed with a one to one thousand solution of corrosive sublimate, this dried off and a five per cent. carbolic acid solution liberally used and allowed to remain on. Then proceed to prepare instruments for the operation. These consist of a straight and probe pointed tenotome, with an extra bistoury, two fine needles threaded with about half a yard of fine silver wire, or fine hare-lip pins and silk thread, one strong rat toothed forceps; two pressure clamps and a thoroughly clean hypodermic syringe and several small sponges. These should all be wiped over with a small piece of absorbent cotton or sponge soaked in pure carbolic acid, which after a few minutes may be dried off with a clean towel, or better, a piece of aseptic cotton, and the instrument laid in a five per cent. carbolic acid solution. The animal is secured with a twitch and side line on limb opposite the one to be operated upon, and drawn well forward. About one drachm of a five per cent. cocaine solution is injected over the seat of the incision and well distributed in the connective tissue by rubbing the part with the hand. An incision is then made on the inferior third of the line indicated, about one and a half or two inches in length, the lower part of the incision resting on the head of the rudimentary metatarsal at the level of the tarso-metatarsal articulation. It is of extreme importance to have all cutting instruments in perfect condition, as clearly cut tissues heal much more rapidly than do ragged incisions. After having exposed the tendon, the probe pointed bistoury is carried under it with the cutting edge down, the knife has a perpendicular position, it is then rotated into a vertical position by carrying the probe point of the instrument well forward into the anterior cul-de-sac of the synovial bursa. When in this position the edge of the knife is rotated outward a half turn, which brings it against the tendon in a vertical direction, cutting it from forward backward. The

posterior portion of the tendon is seized with the rat-tooth forceps and draw out of the wound and cut as close to its cuneiform as possible. The wound may now be closed with two or three silver wire sutures or pins, which should be loosened or even removed on the second or third day, especially if there is much swelling. Many of these wounds will heal by first intention, and all of them in from twelve to fifteen days.

Complications.—In my experience these have been entirely wanting, and when I have seen them they have been due to the practice of firing or periosteotomy at the time of operation, or to the infection of the wound by dirty hands or instruments. The induration and thickening at the point of operation, which remains after the wound has healed, should give no concern, as it will gradually disappear, and in three or four months be entirely absorbed.

Conclusions.—My experience has taught me these facts: *First*—that the reaction of the cunean tendon for the different forms of spavin will give a larger percentage of cures than any other treatment. *Second*—that it must be performed at least two months before firing, and should be the first treatment, and not the last, as advised by all writers on this subject. *Third*—that the tendon should be *resected* and as much of it removed as possible, simple section not giving satisfactory results. *Fourth*—that the operation should not be complicated by any additional operation, such as periosteotomy or firing, and special care taken to separate the tendon from any surrounding adhesions or connections, as failure not infrequently results from these errors of commission or omission. *Fifth*—that there is but a slight possibility that any bad results can follow this operation, and if it fails to cure, the chances of success with fire are by no means lessened. *Sixth*—that if fire is first applied the chances of success with tenotomy are very materially reduced. *Seventh*—that failures with cunean tenotomy I believe to be due principally to complication of the tibio tarsal articulation, as post-mortem examination in these cases, when the opportunity occurred, indicated this fact.

ACTINOMYCOSIS.

BY DR. G. F. STARKEY, Boon, Iowa.

A paper read before the Iowa State Veterinary Association.

(Concluded).

If located in the connective tissue they develop slowly for a varying length of time, according to the resistance offered, but when this is reduced to the minimum they develop more rapidly and give rise to a tumor, from which they derive the name of lumpy-jaw; for it was long supposed by stockmen that this disease affected only the jaw-bone.

The tumor, which in many cases is firm and dense, may become indurated and remain so for years without change for years; but more frequently they break and discharge a creamy detritus which resembles pus, but lacks the specific micrococci, however, which is always present in pus. After discharging for some time, inflammation and congestion may subside and the opening may heal, leaving only a small cicatrix and slight induration of the skin, and this may be the last of that case of actinomycosis, for spontaneous recovery is not infrequent in this class of cases. More frequently, however, there is a large induration left after the fistula closes, and this induration contains some of the fungus that remains to cause a repetition of the changes just noted, after which a larger and more fibrous tumor results. The repetition may end in a complete cure in an encrusted tumor that remains for an indefinite time without change, or pass rapidly from bad to worse, producing emaciation and death.

When the salivary glands are affected, the process of enlarging and evacuating follows each other at shorter intervals than in the preceding, and according to my observations, spontaneous cure never takes place. The entire gland (and surrounding tissues) are affected, and emaciation ensues, the case terminating as the preceding. In case the lymphatic glands are

the seat of this development, the germs are borne from one to another in rapid succession, leaving a fibrous cord to show the route from one to another of the obliterated glands. How long this might continue and what the result might be is a matter of supposition with me, for I have never seen a case where more than twenty-three of these glands were affected, and that was not of long standing, so responded readily to treatment. When the tongue is the seat of the lesion, the stock owner, as a rule, does not understand that medical interference is necessary until so late that a greatly enlarged organ, covered with ulcers, is what we usually find. Actinomycosis of the tongue seems to form an apparent exception to the rule that actinomycosis cannot exist in the muscle of the bovine species. A careful examination of the superficial structure of the tongue, however, will reveal the true cause. When this disease affects the pulmonary tissue the ante-mortem examination is not in most cases satisfactory proof; but in all such a post-mortem will readily reveal the nature and extent of the lesion. In cases of pharyngeal actinomycosis, the primary seat of the disease is generally external and affects those parts simply by extension. The seat of the trouble may be, however, of primary origin in the pharynx, for even here, as in the intestinal tract, the membrane may be removed and leave a fit place for actinomycotic development. Age, sex, color, size, or breed seem to have no effect upon these formations. The fact that this disease is communicable by inoculation, and that it affects mankind has raised the question—is the flesh of animals affected with actinomycosis fit for human food? In my opinion this depends entirely upon the effect the germ and tumor has upon the general health of the animal.

I care not how large the tumor, or of how long standing, so long as the general health of the animal remains unimpaired and it continues to thrive and fatten, I believe that all the carcass of such animals except the tumor is free from taint and perfectly wholesome for human consumption as food. In any case I believe there is no danger of communication to man even if the animal is becoming thin and emaciated from the effects of the

growth; but in such cases I think the flesh ought to be rejected on the general principle that any animal affected with a disease that so seriously impairs nutrition or destroys the tissues already formed to such an extent as to produce emaciation ought to be rejected as unfit for human food as long as that condition exists unremedied. Having said so much in regard to the sanitary question as it relates to animals with this germ affecting them, we turn now to the treatment, for here is where the financial consideration commences.

This disease, involving as it does, great loss to the cattle-raisers of this country, has until recently been regarded by the veterinary profession as incurable, and is so regarded to-day by that great array of would-be-veterinarians, and many others who ought to know better.

Treatment of these cases consists of internal administration and external application of medicines, with, in some cases, the free use of the knife.

The internal treatment consists in the daily administration of from 3 ii to 3 iii of potassium iodide, until iodism is produced, and then a dose of some laxative to regulate the bowels, together with two or three days rest, when the treatment is again to be repeated with intervals between until the tumor shows signs of diminishing, when the treatment may be gradually decreased, but in most cases must be continued until the tumor has nearly or quite disappeared, for in some cases where an apparent recovery has taken place, a few months later, to my surprise, the tumor again began to develop quite rapidly. Some few cases will be found where the growth does not seem to be affected by potassium iodide in the least, and with such it would be well to discontinue treatment in from four to six weeks if no signs of iodism appear, and the treatment has been increased to 3 iv daily.

Successful treatment by external application requires that the disease be early detected and that the swollen surface be repeatedly blistered, or subjected to the stimulating effects of such agents as soft soap and turpentine. Treatment by evacu-

ation and the escarotic agents works well in the hands of experts; but in the hands of the uninitiated will not give satisfactory results. Evacuation and the use of antiseptics like carbolic acid, creoline, etc., is not successful except in the very early stages, before the dense connective tissue becomes the seat of numerous centers of fungi that cannot be reached by the antiseptic used. Lastly the complete extirpation by the knife if judiciously done is productive of good results. The indications for this treatment are first that the tumor be superficially located, and secondly that it be not too great in extent.

The after treatment of these cases, consisted, in my practice, of application of pine tar and turpentine. All these cases do not permit of a cure by this method, some though they heal up and show no signs of external tumors during life, but on being slaughtered actinomycotic growth are found.

In some of the cases I have operated on, a tumor has reappeared before or soon after the wound was healed. In these cases I infer that all of the tumor was not removed. In the cases treated internally with potassium iodide, where the tumor has reappeared, I infer that all of the germs were not destroyed and that after the medicine had been eliminated from the system they again began development.

By any of the foregoing methods of treatment failures will sometimes be recorded; but probably in the least number of cases where the knife has been judiciously used. I believe, however, that no cases exist where a combination of the foregoing treatment will not effect a radical cure unless the diseased process is located in the chest or abdominal cavities.

The reason for an uncertainty in regard to these, is that I have had no experience with them, and only internal treatment could reach them if they could be diagnosed to a certainty, which is extremely improbable.

The weather and season of the year has a marked effect upon the treatment of this disease, and the food a still greater one, which seems to be entirely overlooked by Dr. Norgard, Inspector in charge of the Chicago Experiments, and all other inves-

tigators as far as I can ascertain. In taking advantage of all things it is well to conclude that actinomycosis is infectious by inoculation, and the discharges should be prevented from dropping over the fields, yards, and pastures. In many cases it renders the flesh of animals unfit for food, thereby causing thousands of dollars loss to the Western stockmen.

In most cases it can be cured, but at best the treatment is expensive and ought to be cheapened.

The kind of feed and season of the year has a very marked effect on the treatment of this disease.

Lastly, this disease needs further investigation before our knowledge is complete. These investigations should extend over the entire change of seasons and be conducted on the stock farms of the Mississippi valley, in order to be of the most value to the stockmen, for here in the home of both host and hostess, and the conditions under which they both live, differ greatly from those obtained at the Western stock yards of Chicago.

PUNCTURED WOUNDS.

BY S. H. BAUMAN, D.V.S., Dubuque, Iowa.

A paper read before the Iowa State Veterinary Medical Association.

In the limited experience I have had I have noticed that the majority of injuries we are called upon to treat in the country are lacerated wounds, due to too close proximity to barb wire fences, while in our city practice scarcely a day passes that we are not called upon to locate lameness, which the owner invariably locates in the regions of the fetlock, shoulder or hips, but which we usually find to be the result of a punctured wound due to a nail prick.

And we will say right here to the credit of the shoers that we have found very few cases where this was due to improper driving of the nails, but by horses picking up nails in the streets.

I believe every city should have a strict ordinance, well en-

forced, prohibiting the sweepings or ashes being thrown into the streets and alleys. Usually boxes, boards, kegs, etc., are burned, when the ashes loaded with nails as well as the sweepings, are dumped into the alleys. The shipping and receiving doors open into the alleys from the warehouses and stores, and by this means our poor animals are compelled to march bravely on to the spikes and brads made ready to receive them.

These are invariably thrust into the soles of the feet, but in one or two cases I recall the nail penetrated above hoof, in or near the coronary band.

Beside nails we also have punctured wounds from toe calks, splinters in runaways and kicking, and being gored by the horns of cattle. Our greatest danger lies in the complications that may follow, such as tetanus or a great amount of sloughing, causing the animal to shed the hoof. We also find in many cases a flow of synovia from an open joint; bursa or sheath of a tendon due to nail prick or fork tine penetrating the cavity.

Usually in cases of punctured wounds, we have elevation of temperature, breathing accelerated, heart action much increased, appetite impaired and very often wholly lost; and all outward appearances show the animal to be in great pain, while in other cases the animal shows little or no inconvenience from the injury. In some cases of nail prick we have much swelling, which may extend up the whole leg to the body, leg very hot and feverish, while in others there is no swelling at all.

Punctured wounds are the most dangerous of all wounds, and should receive prompt attention. If owners realized this they would be saved much trouble and expense. We find the greatest trouble when the nail is not retained in the foot, or, as is the custom, to extract the nail, then fill the opening with tar or some gummy application, and by this means thoroughly seal up the opening, which should have been enlarged, causing the pus or serum to burrow under the sole and wall, and finally finding a point of exit above the hoof or frog.

The treatment from which we have had the most successful results is first and most important. Make a good large external

opening at the most dependent part, so as to get drainage, and keeping this aperture well open until the granulations fill up the puncture to within one-fourth inch of the external opening before allowing the skin to granulate over the surface. Cleanliness is very essential. A solution of peroxide of hydrogen, or mild solution of carbolic acid, will cause the wound to granulate more rapidly than anything we have tried, and also keeps the wound perfectly clean and healthy. Where we have an open joint or flow of synovia, we never inject anything except a mild solution of peroxide of hydrogen into the orifice, and if on the limbs, we pack with oakum and bandage just tight enough to hold the oakum in place; keep the oakum dampened with a 3% solution of carbolic acid.

We never try to stop the flow of synovia, but allow nature to fill the opening with granulations, no matter how long it takes—it must not be plugged up.

We have never derived any benefit from poulticing in these cases, perhaps from the difficulty of retaining them in position.

For nail pricks, by gently tapping, you can locate the spot where the nail entered. When located, remove shoe, also the nail if still in the foot, and with a hoof-knife follow down and cut right through the sole. I would not advise a small opening, in any case to start, less than an inch; making a funnel-shaped opening with half inch at bottom to allow all pus and serum to escape. Also remove all the sole that has been undermined by pus. Then inject a solution of peroxide of hydrogen, and follow with an injection of 50% carbolic acid solution; full strength can be used without injury. Follow this with a good flaxseed poultice, changing every day, for two or three days, or until parts start healthy granulations. In making an opening we keep on cutting until we get to bottom of wound, and do not care for hæmorrhage. We never have had a case of tetanus where the nail prick was opened up properly, and by injecting hyd. peroxide we are enabled to reach all the small canals and drive out the pus. We have tried poultices of ice, ice and salt, bathing in cold and hot water properly antisepticized,

but have noted no marked results or advantages over the flax-seed poultices. As soon as a horse can bear a reasonable amount of weight on the foot have the shoe reset. I would not recommend any rubber or leather to be put under the shoe in these cases, as sand and dirt pack in so tight that it is impossible to keep it clean, or dress without removing the shoe; but make a compress of oakum, and cut a piece of heavy hoop iron the width of shoe, and, by bending, one can get the ends under the shoe; then, by pounding lightly, it will keep the oakum in place, no matter how fast a horse travels. This can be readily removed and repacked as often as necessary. We keep this oakum pack saturated with a 5% solution of carbolic acid. When we get superfluous granulations they are easily gotten rid of with curved shears, knife, burnt alum, strong acid or actual cautery. We should be very guarded in these cases in the prognosis, as the most simple cases often give the most trouble, while the most unpromising surprise us by the rapidity with which they recover. It is not a very enviable position to be placed in, to order an animal destroyed, and find afterward that some stable-man has nursed your patient and brought him out all right—it is a poor advertisement.

I would briefly refer to a couple of cases in our practice where everything seemed most discouraging, the animals made fine recoveries, it being easier to recall these than some that promised well but did not make such fine recoveries.

The first was a fine sorrel horse, 5 years old, weight about 1250 pounds, which was hooked by a bull in the lower part of the neck near the shoulder. We were called about 9 P. M., and found horse in the pasture in this condition. On examination we found a small opening with saliva flowing out in streams. The horse showed considerable distress, deglutition being almost continuous. After a most careful examination, we dissected the muscles carefully, and made an opening fully six to eight inches in length, until we got down to the œsophagus, where we found that organ badly ruptured—being torn almost entirely off, and in a very ragged manner. We took a great deal of

pains to thoroughly clean the parts, using antiseptics, and with difficulty drew the parts together, using a full curved needle and carbolized catgut, making interrupted sutures. If I remember right, we put in seven stitches in the œsophagus. Then we stitched up the skin, closing the wound completely, and ordered the horse tied so he could not eat or drink till morning.

The following morning we found enough swelling to satisfy us, so we removed a few stitches at the most dependent part to allow drainage, there being no flow of saliva at this time or up to the fourth day. We ordered the horse to be fed on nothing but thin gruel, but on the fourth day the owner took pity on the horse and gave him some hay and oats, and in swallowing this rough food a stitch or two was torn in the œsophagus, allowing the food and saliva to flow, but in a much smaller quantity. We did not try to stop the flow after this, but kept the horse on soft food and gruel. After about fifteen days the flow of saliva ceased and in a reasonable length of time the wound healed up nicely. The horse was put to work, and has suffered no inconvenience since. It is now two years since the accident happened. The horse lost little flesh and had little or no systemic disturbance. The only after treatment used was mild antiseptic lotion and cleanliness.

Another case of puncture that seemed like sure death or total disability, was of a fine horse belonging to a carriage team prized very highly by the owner, when the neck-yoke broke, allowing the tongue to fall, and causing the team to run away. The tongue broke and a splinter penetrated the hind leg, starting in at posterior part of the suffraginis, passing under the perforans tendon and down inside of the hoof, and rested on the sole of the foot. The splinter broke off short and remained in the foot. We cast the horse and had to cut the skin and tissues away before we could get hold of it with forceps, and it was with difficulty removed. It came out in two pieces, having split the whole length. The diameter was fully one-half inch and fully eight inches long. We probed the wound and decided best to open through the sole of the foot, it being

the most dependent part, and by that means we secured the best of drainage. We poulticed the foot every other day, alternating with an antiseptic oakum pack for a week, and carefully syringing out the canal every time we dressed the foot or changed the packing. After a week or ten days we had the shoe reset, and kept the oakum compress as described above, and had the groom renew the packing three times a day. We had considerable sloughing and undermining of the sole, which we removed. In this case we had some trouble with contracting of the hoof, but by careful shoeing, blisters and stimulating liniments, the foot has regained its natural size. In six weeks the horse was driven, and has never shown any lameness, and no blemish or enlargement remains to indicate that there had been an injury. The horse suffered terribly the first few days, refused food and water, but after the pus began to flow freely the appetite resumed.

We have tried slings in these cases, also in other injuries, and must say that they have never given us good satisfaction, and we consider them more of a detriment than a benefit. If the animal is unable to stand we prefer them down, rolling them over twice or three times each day.

Complications are liable to set in at any time, and must be met with proper restoratives as the symptoms demand.

Every case must be treated according to the conditions presented, and we must think and act quickly. By proper treatment in the start we save ourselves much trouble that would follow later on by always remembering that good drainage is first and most important. This, with cleanliness and good surroundings, are the essentials for a speedy and favorable termination.

PRACTICAL USES OF COCAINE.

BY J. E. BROWN, D.V.S., Oskaloosa, Iowa.

A paper read before the Iowa State Veterinary Medical Association.

In preparing this paper I only had in view a brief report of my own personal experience with this drug. Of course it would

be impossible to enumerate all the cases in which this drug can advantageously be employed, but I believe, after consultation with many practitioners, that it should be brought into much more general use in our profession than it is at present. I think, also, that if we once become accustomed to using it, and learn how to *properly* use it, we will become more and more enthused with the results obtained.

If I should make the statement here that I would rather be deprived of the use, in my practice, of any other one drug than this, some of my brother practitioners might be startled; so I won't say so. But in all candor, I must say I do not know of any other one agent so applicable in such a variety of cases, and none other for which it would be so difficult to find a substitute. By its use we have been able to discard the hobbles, operating table, and other means of physical resistance or confinement, to a great extent, and perform what would otherwise be painful and difficult operations with ease and safety to ourselves and almost total unconsciousness of pain to our patients. And by so operating we gain for ourselves admiration and praise from our patrons for humane as well as scientific practice.

In all operations to the eye—removing foreign objects, stitching up torn lids, or removing warts or tumors from the lids, after the application of cocaine the eye can be manipulated as easily and freely as any other part of the body. In the removal of warts and tumors two to five grains (depending upon the size of the tumor), dissolved in a little water, and injected at different points around the seat of operation with a hypodermic syringe, usually produces complete anæsthesia to the parts. In those cases care must be exercised that the injections are made outside of all abnormal tissue, else there will be so little absorption that the drug will fail to exert its influence. A radius of more than two inches cannot be successfully anæsthezied from a single puncture, except where it can be made over a nerve trunk, when all the tissues below the puncture, and receiving its nerve supply from that particular trunk, will be influenced.

I have removed tumors of three pounds weight with no

other means of restraint than the twitch, after using the cocaine as above directed.

In more than twenty cases of trephining I have only found it necessary to cast two of the animals. In these cases I usually inject about 1 to $1\frac{1}{2}$ grains of cocaine in solution, immediately at the point of operation, before cutting the skin. Then, if the operation is for the removal of a tooth, a second application of cocaine should be made after the bone is bored, before the mallet and punch is applied.

In neurotomy, when the animal is not particularly opposed to having one foot strapped up, the operation can really be more easily performed with the subject standing than cast. A strap attached just above the fetlock and drawn up over the withers, supports the leg and leaves the foot hanging downward, leaving the seat of operation in a convenient position. Then, with the cocaine injected just above the point for operating, well down into the nerve, any animal that will stand quietly with one foot strapped up can be operated on in this way.

Firing of spavins and ringbones is thus rendered safe and easy. A very small quantity of cocaine injected immediately over the exostosis in spavin may be followed by deep cautery with no evidence of pain whatever.

Another operation which we are called upon to do is the grafting of *split ears*. This would be quite a troublesome piece of work if we could not fall back on cocaine for assistance. After injecting about 1 grain in aqueous solution at the base of the slit, on both the inner and outer sides of the cartilage, the divided edges may be scarified and sutured together without any assistance from the patient. Docking and tenotomy may also thus be rendered painless.

During the past year I have been experimenting with cocaine in castration. In these cases, with the exception of two or three, I failed to get complete anæsthesia, but in all its effect was decidedly noticeable.

After the injection of 3 to 4 grains into each side of the scrotum, the incision may be made without any evidence of pain,

but in severing the cord with the écraseur some degree of pain would be manifested. Injecting directly into the testicle produced very little effect, if any, either on the scrotal walls or the cord. In two or three cases, where I could get at the parts, I made two injections—one in the scrotum and the other into the cord (with quite a long needle), just at or a little above the point of excision, and anæsthesia was complete all through the operation. This last method, however, cannot be made generally practical as the cord cannot be reached for the injection sufficiently high up. Several dogs were castrated, and anæsthesia was complete simply from the injection into the scrotum, and I am fully convinced that this is a practical procedure in all cases of castration. By it I had very little trouble in castrating aged horses without casting, or any other means of restraint than the twitch.

As a test in lameness, cocaine has not acted very satisfactorily for me. In a few cases it has done well, but in many more I have been left in doubt after its use as much as before.

I have been frequently called to cocaine joints, tendons, feet, etc., for a race, and in many instances the results have been very satisfactory, but in other cases it has taken such a quantity to obtain the desired results, and being absorbed, has produced a general narcotic effect, making the animal unsteady in its work. To get the best results, the drug should be administered while the animal is quiet and free from excitement. This feature in the administration demands special attention, for good results are not apt to be obtained if the patient is under excitement when the agent is applied. In this way a small quantity will have its local influence without producing *general effects*.

I have only seen one case in which the drug was used for a surgical operation that any general symptoms followed. In that one several injections were made around a large tumor—probably 10 to 20 grains were used—and after twenty to thirty minutes the breathing became somewhat quickened and shallow, with general nervousness and staring appearance of the eye,

which remained for about an hour. The circulation remained unaltered. Owing to the idiosyncrasies of different animals, more intensified action will be noticed in one case than another from the same size dose; also after a particularly large dose some transient irregularities might be anticipated. I have experienced considerable trouble from time to time in getting a good article of the drug, but where I have had a uniformly good article of the drug I have usually secured uniformly good results.

I have generally found the crystals of cocaine to be of more certain and uniform strength than the powder, and a good article, in my experience, is of a rather clear or opaque color, more like hydrate of chlor., only the crystals are much smaller.

I have not had much to do with the aqueous solutions kept in stock by the druggists, but prefer getting the crystals, which dissolve readily in a little water, and mix fresh for each using.

Some operators have condemned the use of cocaine hypodermically, claiming to have encountered troublesome swellings, ulcers, etc., from its poisonous effects, but with all deference to the surgical knowledge of such operators, I would say, if the drug is pure, made up fresh, and the instrument thoroughly antiseptic, they will encounter no further trouble of that kind.

PSEUDO RABIES IN CATTLE.

BY G. A. JOHNSON, D.V.S., Sioux City, Iowa.

A paper read before the Iowa Veterinary Medical Association.

GENTLEMEN:—When your secretary requested me to prepare a paper for your consideration at this meeting, the question arose, what should I take for a subject? After considering the matter for some time I resolved to give you, as brief as consistency will allow, the results of my investigations of a disease that was quite prevalent among cattle, in certain sections of the state during the summer of 1891 and spring of 1892.

I present this subject not so much with the view of telling what it is, as to show what it is not. But as several of the veterinarians of the state have had more or less experience with the

disease I trust that I may be able to provoke a discussion that may throw more or less light on the subject.

This disease as seen in cattle, very closely resembles rabies, and I doubt not has often been diagnosed as rabies, and for the want of a better term I will designate it as Pseudo Rabies, as a different affection has been termed Cerebro Spinal Meningitis.

So far as I am aware this affection has never been described in the English language.

HISTORY.—During the summer of 1891 and spring of 1892 a disease, supposed to be rabies was prevalent throughout the north central part of the state. In the official capacity of Assistant State Veterinarian I visited several of these outbreaks. I will not burden you with names of owners and number of affected cattle, etc., suffice to say that I have all of them. In the majority of the outbreaks it was supposed that a rabid dog was the cause of the outbreak, and the owner and his neighbors usually believed that it was genuine rabies. Yet in several cases, I found that the better posted element of the community looked upon it as a new disease, or at least new to them; while in other outbreaks there was no account of a dog having been the cause, yet the symptoms of gross pathology was the same in the various outbreaks.

SYMPTOMATOLOGY.—In giving the symptoms you must bear in mind the fact that it is mostly made up from the observation of the parties associated with the animals, while I have seen the disease in all of its various stages, I have never had an opportunity of seeing the disease run its course in same animal, for as officials we are supposed to diagnose a disease and prescribe such regulations as are deemed necessary to control the spread of the disease and in case it be of a contagious nature and then return home. At least we would not be supposed to receive per diem for the time we were waiting to see the disease run its course. But from my observations and the history of the various outbreaks I feel that I can give the symptoms of a fairly typical case.

The first symptoms noticed are bellowing in a peculiar harsh

tone, loss of appetite, accompanied by a startled staring appearance, soon followed by a mild frenzied state, in which an affected animal, that formerly had been perfectly gentle, would be greatly alarmed at the approach of a person and would wildly run away, but as the disease progressed, which was rapidly, this timidity was lost and the animal would become aggressive and chase other animals of the drove and later it would attack any animal or person, and especially a dog or hog, and during the most aggressive stage would attack moving objects, from the size of a mouse up. At this stage of the disease paralysis began to supervene and then there would be alternate periods of frenzy and partial coma. The frenzied periods growing shorter in duration and less in severity, while the periods of coma correspondingly increased in duration and profoundness until complete paralysis supervened. During the early stages of the disease the bowels move quite freely but during the latter stage there is usually a slight constipation. The fæces are nearly if not always of a dark color. During the early stages of the disease small quantities of highly colored urine are very frequently passed.

The pupils of the eyes are usually fully dilated. Prognosis: death; so far as I have been able to learn the disease always terminates in death.

Necropsy, revealed a normal condition of all the internal viscera, except that in a few cases the kidneys were slightly congested and in about 5% of the cases the abomasum was impacted, but in no case was there any marked engorgement. But upon opening the cranial cavity and spinal column, we found marked lesions of inflammation, especially in the brain when all the membranes, especially the pia mater, showed marked inflamed areas and the cavities contained more or less inflammatory exudates, while those of the spinal column contained more or less fluid and the membranes were more or less inflamed, especially in the lumbar region. That portion of the pia mater covering the anterior-inferior portion of the cerebrum besides showing the most marked congestion, was of a dark color. I

will not try to account for the cause of this peculiar dark coloring, but trust that it will be explained during the discussion which I hope that I may be able to provoke.

The arachnoid space was filled with a serous like exudate and the ventricles of the brain were always filled with an inflammatory exudate containing more or less blood, and fibrous clots. I have no data relative to the histological condition of the brain or spinal cord.

Another peculiar feature of the disease is that there is very little bloating after the animal has died. The disease runs its course in from one to ten days, usual length from four to five.

Were these outbreaks of rabies? I emphatically answer no, and I base my opinion on the following facts:

1st. The Pathology, for in this disease we find marked inflammatory changes, and the dark coloring of the membranes, while in rabies we find that the inflammatory changes are very slight, or entirely absent.

2d. The Symptomatology is different in this disease. We find that the excitable stage resembles frenzy more than fits or convulsions as in rabies, and that this stage is of shorter duration and the paralytic stage of longer duration than the corresponding stages of rabies, and there is very little slobbering in this disease, while in rabies it is usually very profuse.

3d. That this disease was confined to localities having similar conditions as to feed and water, factors which certainly do not enter into the localization and distribution of rabies.

During 1891 this disease, so far as I have been able to ascertain, was confined to the north central part of the state, with perhaps an isolated case in other portions of the state, as one case that was brought to my knowledge in the western part of Plymouth county on the Big Sioux River Bottom where the cattle drank from a pond. That portion of the state where the disease appeared as an enzootic, is mostly level or rolling prairie dotted with small lakes and ponds. In every outbreak that I visited the cattle derived their water supply from these ponds, with one exception, and in this outbreak the cattle drank from a

small pond fed by a spring or seap. This outbreak occurred in Marshall county, and I will refer to it again. I will try to show that the peculiar conditions of the feed found in this section of the state were associated with, if they were not the cause of the disease.

The early spring of this year was quite wet and these ponds were all filled with water, then there was a month or two of weather, during which a rank growth of vegetation sprang up in the beds of these ponds, then in June we had some heavy rains which filled the ponds thus submerging this vegetation that had grown in the ponds and it soon began to decay, and as the pastures were getting short the cattle fed near to and in these ponds thus eating more or less of the decayed grass, and about this time this disease began to appear, often several outbreaks, situated considerable distance apart, would occur about the same time.

In the Marshall county outbreak before mentioned, the cattle drank from a pool probably about twenty feet wide, and forty feet long, fed by springs further up the swale. But the bottom and banks of this pool were covered by a submerged and decaying vegetation very similar to that found in the larger ponds.

Another fact worthy of notice in connection with this outbreak is, that on this farm there were two herds of cattle, one of about twenty head, composed of young cattle, dry milk cows and one bull was kept in the pasture on the hills and drank from the pool before described. This herd was attacked with this disease and the bull and two heifers died, while the other herd composed of about ten cows in milk, were kept in the bottom pasture and separated from the other herd by a barb wire fence. The cattle in this pasture drank from a small creek that ran through the pasture. None of the second herd were affected with the disease.

In the outbreaks that occurred during the spring of 1892, the general conditions were somewhat different, but the conditions of the feed were similar. The spring was an exceedingly wet one

and most of the forage was badly decayed, and consequently in a somewhat similar condition to that found in the ponds the year before.

Just what is the exciting cause of this affection. I am unable to say, but I firmly believe that it is either a germ or fungus, associated with the decayed vegetation that, when taken into the system multiplies and grows and produces the pathological changes and their accompanying train of symptoms. If these were all outbreaks of rabies why should sections, where these conditions did exist, be affected while an adjoining section where other conditions prevailed be exempt from the disease?

Again several children were bitten by the dogs supposed to have been rabid and the cause of these outbreaks, but none of the children even developed any symptoms of rabies, and could we not reasonably expect that if a dog that had rabies in such an aggravated form that he would communicate the disease to ten or twelve head of cattle without even biting one of them, severe enough to leave a visible mark, could bite a child on the hand so that the blood was drawn, that the child would be likely to contract the disease. Such was the history of one outbreak.

Again if these were outbreaks of rabies, why was the disease so much more prevalent in cattle than in dogs, as there was seldom more than one or two dogs affected in a neighborhood. Of animals other than cattle being affected were the dogs, none of which presented symptoms clearly indicating rabies, and in one outbreak one hog was supposed to be affected as were the cattle, presenting similar symptoms, and at one other outbreak a colt. I did not see either of the cases and from the history of the cases was unable to associate them with the affection of the cattle.

Although not going as deeply into the pathology or symptomatology of the disease as I might have wished to have done, I sincerely hope that I have succeeded in presenting the subject in such a light as to elicit a spirited discussion. If such should be the results then the mission of the paper will have been ful-

filled. I will leave the description of the germ or fungi and minute pathology to either the officials of experiment station at Ames or to those of the Bureau of Animal Industry, each of which have been supplied with pathological specimens.

A DISCUSSION OF THE REPORT ON VETERINARY EDUCATION.

BY PROF. OLOF SCHWARZKOPF, V.M.D., Chicago, Ill.

Of the many valuable reports presented to our National Association at its last meeting in Chicago none are more important or interesting than the report on veterinary education by Prof. Liautard and that on intelligence and education by Prof. Osgood. These reports constitute a thorough analysis of the good and bad features of our present educational systems, and the suggestions for advancement breathe that refreshing air of professional enthusiasm which must, by necessity, inspire the intelligent part of our profession. Already some of our state societies have been vividly discussing the subject, and it appears that there are not a few who entertain fears for the immediate future of the profession or who even prophesy a temporary degradation.

Personally, I am inclined to look upon this question philosophically. For one acquainted with the history of our profession the condition of affairs offers nothing really alarming. It is true that there exists at present in certain sections of this country a dislocation of professional interests resulting from a natural animosity between the graduates of the good and the bad colleges. But while such conditions are deplorable they seem necessary; an amalgamation of these two elements is unlikely, and a struggle for supremacy must ensue. The same strife has passed long ago in those European countries where veterinary science has raised itself to the level of the learned professions. There it took from twenty to fifty years to bring the matter to a focus and gain a higher professional standard.

The rapidity of the American spirit has cast upon us the same problems within a few years, and there can be no longer any doubt that we are fast approaching a crisis. Whatever will be its outcome, it will largely depend upon the wisdom and conservatism of our leading professional men.

Prof. Liautard suggests in his report that we now have two classes of colleges: Individual or corporation schools, which are supported by the fees of students, and schools which are connected with universities and supported by the state. While such classification is correct in one sense, morally our colleges group together differently. There are the three-year colleges, most of which are now fairly good veterinary schools, and a few of them even stand comparison with some of the old institutions abroad. By right of nature, these three-year schools form one class, and the graduates of these schools represent the scientific veterinarians of America. The two-year schools naturally form the second and lower class, and are of very different make-up. One or two of the old two-term schools have done good work in years gone by and actually fulfilled a mission: they have sent out a sort of rough-and-tumble practitioner, but a man with a ready practical judgment and eminently fitted for the peculiar needs of this country in times past. Some of these men, by their perseverance, honest principles and constant self-education have met with wonderful success; but the bulk of them never overstepped the limits of a humble horse-doctor, and resemble the graduated farrier of Europe of olden times.

Quite different are the younger two-term schools; they are money-making diploma-mills, a distinctly American species. With a few exceptions, the offspring of these schools resemble the clown-like charlatan of mediæval times, as pictured to us in historical novels. They are talkative, self-praising, overbearing and ill-bred men; of course they are uneducated and unprincipled. They noisily spread their diploma all over creation, publicly explain their lengthy degree, and announce that their school teaches new methods of treatment. They

crowd in everywhere; associate with the ward politician, and succeed in winning the few positions offered by the city or state. They even make a run at universities and agricultural colleges and experiment stations to obtain scientific positions, and, strange to say, a few such men have succeeded. If everything else fails, they found a new two-term veterinary college and become professors.

Such are the men who are rapidly filling our ranks. The West especially is blessed with them in abundance. The old quack without the diploma, ignorant but honest, is disappearing, and the modern quack with the diploma, but dishonest and a fraud, is filling its place. If a danger threatens our profession it is from this new enemy alone. Our wrath should be aroused and our energies should be concentrated in stopping these schools from committing further crimes upon the animal world, our growing profession and American civilization.*

(To be Continued.)

PYO-SEPTHAMIE IN FOALS CAUSED BY PHLEBITIS UMBILICALIS.

BY JOHN WENDE, V.S.

A paper presented at the New York State Veterinary Medical Society.†

The above appellation is used by Prof. Deickerhoff to designate the disease to which I wish to call your attention. Prof. Walley has given the term specific arthritis, or synovitis; Prof. Williams describes the malady under the head of scrofulous ostitis, and considers it as scrofulous in its nature. Some writers view it as a constitutional disease, while others, especially the German veterinarians of to-day, accept it as pyæmic or septicæmic in origin, and a sequel to or identical with omphalo phlebitis. The disease has received attention from some

* The continuation of this article has unfortunately reached us too late to be inserted in this issue.—EDIT.

† This did not reach our office until late in March—hence its late publication.

of the leading veterinarians in Europe for the last one hundred years. Brugnone, of Turin, mentioned it as early as 1781. Dietrichs describes the malady in the *Gestutskunde* in 1824, under the name of Lahure multiple anthritis, a disease of foals affecting the bones and joints, and about the same time Wirth designated the disease as acute epilepsy, and Hofacker confounded it with rachitis; Renard, a French veterinarian, reported the disease in 1828 existing as an enzootic at the large breeding establishments of France. In 1831 Strauss described the disease as a constitutional disturbance of the lymphatic system, especially the mesenteric glands. Trager, in 1839, described it as due to a malcondition of the blood. Then followed Heusinger, Funke, Spinola and Vieth, who were converts to the scrofulous hypothesis. Haubner in 1840, being governed by its varied manifestations, described it as three different diseases affecting the suckling young, *viz.*, lahure, rheumatism and arthritis. The views of Hering, in 1749, were that the malady was of constitutional origin, the nature of which hovered somewhere between rheumatism, tetanus and arthritis. This was followed by the theory of Furstenberg as a fatty degeneration of the muscles, the cause of which he cast upon the sheet-anchor catching cold. Then came Roloff with rachitis as the cause of the trouble. Thus the hypothetical confusion of this disease existed until 1873, when Bollinger, by holding repeated autopsies, discovered the true cause of this malady.

As you will infer from the term omphalo phlebitis, we have primarily an inflammation of the umbilicus and umbilical blood-vessels, which forms a distributing point and fountain-head for a metastatic pyæmia; the condition of the navel at or immediately after birth offers every opportunity for the absorption of a septic poison into the umbilical vein, there to regenerate itself a thousand-fold in the thrombus remaining after the cessation of the foetal circulation; from here the virus, in the form of small emboli, passes through the venal portal into the circulation, by which they are distributed to all parts of the body, lodging in the minute capillaries of any organ or tissue, manifesting its

seat in due course of time by inflammation and suppuration, and, according to the location of the embolism, you may have a varied number of complications, such as pneumonia, hepatitis, nephritis, cerebro-spinal meningitis, arthritis, choroiditis, iritis, etc.

The symptoms vary according to localization and extent of complications; primarily you have hurried breathing, high fever, varying from 100° to 106° F., utter want of appetite, distressed expression of countenance, patient usually preferring the recumbent position, manifesting great weakness if forced to rise; there may appear suddenly an intensely painful swelling of one or more joints, attributed generally to an injury incurred by the mare; these in turn may disappear as quickly as they developed, only to arise again at some other articulation with renewed virulence, usually terminating in suppuration; moist and swollen condition of the navel, from the center of which there may be a discharge of ichorous pus, and immediately connected with this may be a pervious urachus, which is not, however, an imperative condition, and if present is readily recognized by the almost constant dribbling of urine from the umbilicus, which, during the first stages of the disease, is secreted in large quantities, light in color and acid in reaction; constipation of the bowels, which may soon be followed by diarrhœa, the fæcal matter being clay-colored and emitting an extremely offensive stench; fainting spells have been observed as the disease advances, abscesses appear in various parts of the body, and if not opened surgically, will burst, allowing the escape of a creamy and offensive smelling pus, the discharge being especially fœtid if joints and ligaments are affected.

Post-mortem examinations of colts that have died of this malady, disclose many lesions, such as dilatation of the umbilical vein containing a thrombus surrounded by an accumulation of discolored or greyish-white purulent matter, deep-seated muscular and superficial abscesses; liver is enlarged, friable and clay-colored, with localized accumulations of pus, inflammation of the lungs, with abscesses in their parenchyma; the latter may

open into the bronchial tubes, thereby producing a diffuse purulent bronchitis; pleuritis, with serous exudate in thoracic cavity; the heart, spleen and kidneys present structural changes, inflammation of the bowels extending to the mesenteric glands; arthritis with purulent infiltration, often to such an extent that bones, cartilages, ligaments and periosteum have become macerated.

If the veterinarian is called in during the first stages, when the disease has not extended beyond the navel and navel vein, then a favorable prognosis can be given as the omphalitis is only local and amenable to treatment; if, on the other hand, he is not consulted until a generalized metastatic pyæmia has been established, then the prognosis must be guarded.

Siedamgrotzky places the death-rate at 75% Hering cites a record kept of a breeding establishment in Germany for fifteen years, and says that of 187 colts that died there during that interval, 85 succumbed to this malady, and of 67 colts attacked by the disease, 47 died before reaching the age of three weeks.

In order to prevent the trouble the mare should be placed in a stall before foaling where the surroundings are in a perfect hygienic condition, and not into a stall that has been used for the purpose recently, unless it has been thoroughly cleaned and disinfected. If the season of the year and other conditions are favorable, a cleaned pasture field is preferred; if the colt is foaled in pasture, let it alone by all means, unless there are indications of disease; if born in stable, have the latter kept clean, wash the navel several times daily with some antiseptic lotion, or dust the parts with equal portions of iodoform and boracic acid, over which apply a pledget of absorbent cotton, to be kept in place by a bandage around the body. This should be carefully attended to until all danger of infection at the umbilicus is past; ligating the latter, as recommended by some authors, should not be practiced under any circumstances. Some German authors advise an application of pine tar to the navel at or soon after birth.

If the disease is once established, treatment cannot be recommended too soon; if in the first stages, the patient should be laid on its back and held by attendants. The umbilical region should be thoroughly washed with some antiseptic solution, then grasp the navel with one hand, with a sharp scalpel in the other make an incision long and deep enough to find the affected vein, which then should be thoroughly washed out with a 10% solution of creolin, using for the operation a medium-sized human catheter connected to a rubber bulb syringe. Do this several times daily, dust the parts with an equal mixture of iodoform and boracic acid, over which apply a pledget of absorbent cotton, to be kept in place by a bandage around the body. If abscesses have formed they should be opened at once, unless located in the joints, then should be aspirated and the cavity washed out with a saturated solution of boric acid; other abscesses to receive the same attention as umbilicus. Internal remedies should be such as to counteract the conditions present in the case if constipation manifests itself. In summer give, small doses of Epsom salts; in cold weather, sweet oil in doses from one to two ounces is preferable, until the bowels regain their normal condition; if diarrhœa exists, this should be overcome with vegetable tonics and astringents; in extreme cases, bismuth subnitrates may be given in ten to twenty grain doses two or three times daily. If the circulation is weak and requires stimulation, give spts. camphor one to two drachms, diluted in milk; salicylate of soda and quinine can also be given in their respective doses, but experience has taught me to give the colt as few internal remedies as possible, and at the same time to feed the dam a generous diet in which is mixed large doses of hyposulphite of soda and powdered gentian root.

If pervious urachus exists, inject the ordinary white lotion, or a solution of nitrate of silver, five grains to the ounce of water, several times daily.

CASTRATION.

BY W. E. B. MILLER, D.V.S.

A paper read before the Pennsylvania State Veterinary Medical Association.

(Concluded.)

One of the ridglings was badly ruptured and I will later on refer to him. Hence the ratio of mortality has been close to 12-5 % of this number. Twenty-one were ruptured on one or both sides, twenty-four were operated on for scirrhus cords, following some other man's work on operation. In most cases the hernias were either known of or diagnosed before the operation, but in some not so, and not until it was revealed by the protrusion of the intestine through the opening in the scrotum.

In every case wherein the rupture was known or diagnosed, and in all operations for the scirrhus cord, the animal was cast, as in the operations on ridglings. The record of deaths occurring during this period, is as follows: Asher Applegate, of Smithville, N. J., owned bay stallion three years old, castrated June 15, 1883; he insisted upon having *the animal cast*, which was done when the operation was completed, and the animal let up, he at once became very restless and immediately broke out in a profuse perspiration and seemed much depressed. I could see no immediate cause, so I left him and went to a neighboring farm and operated on a three-weeks-old colt. Before I was through the son of the owner of the other horse came running over and said his patient was bleeding from both wounds and was very weak. I hastened back to the place and was just in time to see the animal fall down, when in a few minutes he died. I at once made a post-mortem examination, and on opening the abdominal cavity, was surprised to find it almost entirely filled with blood; on investigating the cause I discovered a large tumor in the lumbar region, involving and pressing down the posterior aorta to a considerable extent. Just behind the tumor was a large longitudinal rupture of the walls of the blood-vessel, through which all the blood had es-

caped into the abdominal cavity, and had even passed down through the inguinal canals and out of the openings I had made in the scrotum, the horse had bled to death.

Meredith Owen, of Paulsboro, N. J., gray three years old, cut April 23, 1885; took cold on contracted adenitis, and died of it, or from the complication of the two. On May 6th, thirteen days later, Wm. D. Gill, of the same place, had bay colt two years old operated upon on the same day, April 23d, and he died May 14th, with same complications twenty-one days after being operated on.

Geo. Marsden, 1621 South Seventh Street, Philadelphia, owned three-year-old sorrel; I castrated him April 27th, the same year, and he died of lock-jaw May 24th, twenty-seven days after operation. E. C. Cooper, near Newbold, Gloucester County, N. J., had bay double ridgling cut April 12, 1886, died of blood-poison June 30th. The last few days before death he resembled an animal in the last stages of purpura hæmorrhagica.

Summary: Adenitis 2, tetanus 1, blood-poison 1, total of 4. Wm. Smelley, of Dunellen, N. J., stable along the river, in a low marshy land, had two colts cut May 12, 1886. One aged two years, died of lock-jaw May 23d, or eleven days after operation, the other one-year-old having same symptoms, came near dying also, but finally recovered. Amos H. Stratton, Glendale, Camden County, N. J., had a bay four-year-old cut June 3, 1886, was ruptured on the left side; intestines came out and caused much difficulty in replacement; he died of peritonitis June 7th, four days after. James Dalton, near Suffolk Park, Pa., had bay two-year-old cut July 6th; ruptured on both sides; died of peritonitis July 12th, six days after. Summary: Tetanus 1, rupture and peritonitis 2, 1887; none died. Jacob C. Daubman, Mount Ephraim, Camden County, N. J., black stallion five years old; very plethoric and skin in bad condition; horse very bad tempered and could not be cared for properly; cut on May 16, 1888; he died June 5th; post-mortem developed double pneumonia. The stables at this farm were in a terribly dilapidated condition, and the weather very bad. The owner also

lost several cows about the same time from causes unknown, so said the attendant. The same owner had bay colt one-year-old, cut on same day, June 2, 1888, and he died on June 6th, four days later; post-mortem showed lesions same as in the black colt, and both presented the same symptoms during illness. In making the post-mortem examinations on these animals, I was assisted by Dr. A. T. Sellers, of Camden, who entirely agreed with me in that death was due and caused by pneumonia. J. B. Justice, of Swedesboro, N. J., had a black three-year-old, cut June 20, 1888; he was ruptured on both sides and very difficult to reduce and replace; it took about four hours to reduce this hernia, and he died June 23d, three days later, showing summary of loss: blood-poison 1, pneumonia 2, peritonitis 1, a total of 4. Joshua Joyce, Woodbury, N. J., double ridgling three years old (poor and weak), cut May 18, 1889; this colt had been cut into on both sides by some one who failed to get either testicle, this rendered the operation more difficult. (Probably this was one of those on which Dr. Rogers failed, it being quite near his place of residence;) Cause of death, lock-jaw. Wm. J. Thompson, of Gloucester City, a Shetland pony two years old, cut April 8, 1890; died of lock-jaw April 18th, or ten days later. S. Burris Richardson, of Massey, Md., had five cut on May 10, 1890, ages ranging from two to five years. One three years old died of lock-jaw May 29th, or nineteen days later, the others all did well. Richard Howard, of Monkton, Md., had two ridglings cut on May 23, 1890, one aged nine years died of peritonitis four days later; the other, and also a three-year-old, cut same day, did well. J. T. Garrison, of Vineland, N. J., had black three-year-old cut October 16, 1890, which died of lock-jaw seven days later. Summary: Peritonitis 1, lock-jaw 3; total 4. Harrison Robbins, of Merchantville, N. J., had a bay three-year-old cut because of a strangulated hernia on April 15, 1891; he died April 18th, three days later of peritonitis. The operation was performed as a last resource, the animal having been sick for two days, and all other means employed to produce the reduc-

tion of the hernia before I was called to see the case; the owner was very desirous of retaining this horse entire. 1892, no deaths from any cause. 1893 I cut one for Henry Metzger, 3516 South Twenty-eighth Street, Philadelphia; it was a roan two years old, and on pasture in the Neck below Stone House Road, on a farm; cut him on May 9th; the location was very bad; no stable, only an old, broken-down shed; lands very wet, marshy and unhealthful; was called to see him on May 29th, and found him suffering from pneumonia; revisited him on the 31st, found him down and unable to rise; attempted to administer a stimulant when he stretched out and died. Post-mortem made at once and revealed double pneumonia. Mr. Frank Brown, of Philadelphia, had a sorrel horse cut at Diston's farm, Woodstown, N. J. The horse was eight years old, and I operated on him June 10, 1893; he died on June 19th, and a post-mortem made by Dr. L. M. Bignell and myself on same day proved that he died of peritonitis. Mr. Chas. H. Smith, of Haddonfield, N. J., had a brown thoroughbred ruptured on one side and ridgling on the other side; this horse was being prepared for this operation for two or three days previously. The animal was carefully cast and secured, the region of the right canal explored and entrance effected into the abdominal cavity. After considerable manipulation the gubernaculum testes was found (misplaced), gentle traction was made upon it and kept up for a long time, but the testicle did not respond; the animal made several violent struggles (which generally helps the operator) when this condition is found, in this instance it did no good, and I worked at it for half an hour, and could not pull the testicle to the opening which by this time had (owing to the struggles of the animal) grown so large that it admit of my entire hand going through and exploring the cavity. I failed to find the testicle however, and the withdrawal of my hand was followed by protrusion of the intestines into the opening and down into the scrotum. I then had another half hour's work replacing the intestines, sewing up the rupture (a very difficult thing to do by the way) and packing and plugging

up the wound with oakum, saturated with bichloride and creoline solution. I then reduced the hernia on the left side, which was present prior to casting the animal; removed that testicle by the covered operation, and let the animal upon his feet; for a time he seemed considerably distressed and I ordered stimulants administered during the balance of the day. Toward night he began to have violent pains and I was telephoned to that effect, I replied through the telephone directing them to use opiates. Through the night the horse rolled around considerably, but gradually grew more quiet; the following morning he appeared to be much better, so the groom said, but that evening he died. On the 22d I made a post-mortem examination; peritonitis had set it. A portion of the intestines had again passed into the inguinal canal on the left side, and was strangulated alongside of the clamps which I had attached to the covered cord. The stitches I had put into the right side were still holding, and the packing in place, but the parts surrounding were terribly inflamed. The ridgling testicle was found encysted in a mass of omentum, and all firmly adhered to a tumor about as large as a goose egg, which entire mass was adhered to the abdominal wall in the lower portion of the abdomen, and about on a line with the cartilages of the ribs; no amount of pulling on the cord from the internal inguinal ring could ever have loosened the testicle.

The walls of the abdomen had been injured probably from a kick externally, just at that point which most likely accounted for the condition within.

From the above list we show the causes of death to be from

Rupture of blood-vessel.....	1
Adenitis.....	2
Peritonitis.....	7
Tetanus.....	6
Blood-poison.....	2
Pneumonia.....	3
Total.....	21

Of those which died of peritonitis, at least three of them were ruptured prior to or at the time of the operation or both;

of the others, two were ridglings, and one was normal and all right at the time the operation was performed; from the above you will observe that the ratio of mortality during the last eleven years was less than during the first ten years, as the following will show:

From 1868 to 1877 inclusive, there were castrated 1144; number of deaths 19; ratio about $1\frac{3}{4}\%$ from 1877 to 1883; record complete.

From 1883 to 1893 inclusive, I castrated 1416; number of deaths 21; ratio about 1 2-5 %. Perhaps the question may be asked, how do you know that the number mentioned above includes all deaths that have occurred?

When I operate at any place I take the name of the owner, age of animal and his description, and have the owner agree to write me or inform me by other means, if they prefer, just how long their animal was in *recovering*, or *if he died*. I may fail in some instances to get a reply if he recovers, but never if he dies, especially if he happens to be a favorite colt.

In my practice this is more likely to be the case than in many others, as almost all my operations have been done upon *special orders*, principally upon valuable stock upon which the owner did not care to assume any more risk than possible, therefore they prefer the standing operation.

I have prolonged this paper to a much greater length than I anticipated, I will therefore bring it to a close with *thanks* for your interest manifested and patience in listening to it, and if you have derived any benefit or obtained any useful information from it, I shall feel amply repaid.

REPORTS OF CASES.

SUPPURATIVE LYMPHANGITIS.

BY W. C. SIEGMUND, D.V.S., House Surgeon, New York City.

A brown mare, the property of a dealer, after being turned out all winter, was brought to the city in the middle of March, to be groomed and fitted for sale.

About the middle of April the owner noticed one morning that the near hind leg was greatly swollen, having become so during the night. He thought it was only stocked, and set to work to treat it himself.

On the 16th of April we called to see the animal, and found her in the following condition :

The near hind leg greatly swollen, extending from the fetlock to the stifle and ischio-pubic symphysis. Corded here and there, ending very abruptly, throwing the leg and stifle in abduction and causing lameness. The leg was very hot and painful to the touch. The animal seemed in great distress, having a temperature of $105\ 1\text{--}5^{\circ}$ F., pulse 76, respiration 24; coat harsh and dry, animal appearing hide bound. A diagnosis of lymphangitis was made, and animal ordered to the hospital.

The treatment consisted of a strong alcoholic stimulant and hot fomentation to the leg.

April 17th.—The animal's condition to-day is but slightly improved. Temperature, $104\ 2\text{--}5^{\circ}$; pulse, 72; respiration, 24. The leg was somewhat diminished in size, and a small ulcer, resembling a calk, was found on the anterior face of the coronet, from which a small stream of blood and pus escaped. The ulcer was cauterized with carbolic acid. There appeared during the day an œdematous swelling under the abdomen in the course of the left milk vein, extending from the left mammæ to the sternum. The same treatment was continued.

April 18th.—The animal's pulse and temperature raised as follows during the day:

8 A. M.	—Pulse, 72; temperature,	$104\text{--}5^{\circ}$.
12 noon.	— “ 72; “	102°
4 P. M.	— “ 60; “	101°

No change has taken place in the swollen leg since yesterday. A small abscess, ruptured just above the inside of the hock, discharging a mixture of blood and pus.

The animal's appetite continues fair, taking 6 quarts of oats and 9 pounds of hay a day. Diuretics were added to the stimulant and the hot fomentations to the leg continued.

April 19th.—The leg remains in the same swollen, painful condition, accompanied by the formation and rupture of numerous small abscesses on the flat of the thigh, discharging the same creamy blood-tinged pus as the former. Old ulcers continued to discharge, their edges granulating angrily and having no tendency to heal. Suspecting the lymphangitis might be only symptomatic, the animal was inoculated with mallein to-day, and her temperature varies as follow :

8 A. M.—103°	F.	4 P. M.—103 2-5°	F.
10 " —100°	"	6 " 100°	"
12 noon.—102 1-5°	"	8 " 105°	"
2 P. M.—104 2-5°	"	10 " 105°	"

At 4 o'clock P. M. a painful swelling appeared at the seat of inoculation.

April 20th.—The swelling at the seat of inoculation has disappeared.

The animal's appetite continues fair, taking 6 quarts of oats and 9 pounds of hay.

Lungs were examined and found to be normal. The animal's temperature varies as follows during the day :

8 A. M.—103 1-5°	F.	4 P. M.—101 2-5°	F.
10 " 102 3-5°	"	6 " 101°	"
12 noon.—104 4-5°	"	8 " 101 2-5°	"
2 P. M.—100 3-4°	"	10 " 104°	"

There is no change in the swollen leg, abscesses continue to form and are lanced, old ulcers continuously discharge pus, literally covering the leg, matting the hair with pus of a foul odor. The leg is washed clean and fomented antiseptically twice daily.

Same general treatment continued.

April 21st.—There is a marked change in the animal's condition to-day, her temperature fluctuating between 101° F. and 104° F. during the day. The pulse is soft and full; the eye has a peculiar brilliant aspect and is drawn deeply into the orbital cavity. The coat is harsh, staring and hide bound. Animal appears in distress and pain. Abscesses continue to form and are lanced. A particularly large abscess was opened

about two inches above the tarsal arch, and about 20 ounces of pus escaped.

The alcoholic stimulant is given in increased doses three times daily. Fomentations continued.

April 22d.—The animal's appetite begins to fail her, she taking only two quarts of oats and five pounds of hay. The temperature fluctuates between 98° and 102° during the day. The continued suppurative drain begins to tell on the animal's system as she is gradually emaciating.

The leg does not decrease in size; more abscesses form and discharge.

April 23d.—After one week's treatment there are no signs of improvement in the animal's condition. The leg still swollen and painful, a mass of indolent ulcers, forming and discharging abscesses.

The animal's appetite is poor, the temperature fluctuating between 98° and $102\ 3-5^{\circ}$ during the day.

The same treatment is continued.

April 24th-30th.—No change for the better, animal in still greater distressed pain. She has never lain down since she was admitted to the hospital. The temperature fluctuating between 98° and $102\ 4-5^{\circ}$ daily. Up to date over forty abscesses have been opened, all having an ulcer which has no tendency to heal. The appetite is poor and the animal is reduced considerably in weight.

April 31st.—Animal was destroyed and the following post-mortem-examination made:

In dissecting the leg, the incision was started at the seat of the abscess, near the hock, following upwards in the course of the posterior tibial artery, between the bellies of the gastrocnemii muscles to the popliteal lymphatic glands, between the biceps femoris and semi-tendinosus muscles. Thence through the interstice, the branches of great adductor of the thigh, over the vastus internus, thence between the pectineus, sartorius and psoas iliacus muscles, and reaching the seat of the deep inguinal lymphatic glands.

In cutting the skin a straw-colored serosity was noticed to escape, but very little blood. The subcutaneous areolar tissue was infiltrated by material, varying one-half to one and a half inches in thickness, gritty under the knife, interrupted here and there by a small ulcer. After passing through this tissue a cavity was found measuring $2 \times 2\frac{1}{2}$ inches in diameter, following the course of the femoral arteries. This cavity contained pus and blood. The surrounding muscular tissue was anæmic; the intercellular tissue was of yellow color, prominent and modelling the muscular tissue. The deep inguinal glands and popliteal glands could not be found.

The subsacral lymphatic glands, reservoir of pecquer, spleen and thoracic duct were normal. The lymphatic vessels on the mesentary stood out prominently, appearing like the arteries do when injected with plaster.

THE TOXIC EFFECTS OF COCAINE AA. LOCAL ANASTHETIC.

BY W. W. YARD, D.V.S., House Surgeon, New York City.

A large water spaniel bitch, ten years old, weighing about seventy-five pounds was brought to the hospital April 24th, for the removal of a large Sarcoma of the mammæ. Patient otherwise seemed to be in perfect health. All precautions being taken as to the age of the animal, a 4% solution of freshly prepared cocaine was hypodermically injected at six different points, patient receiving about 40 minims or 13-5 grains of the drug itself. After ten minutes had elapsed the operation was commenced and the tumor removed, accompanied with considerable hæmorrhage. Nothing abnormal being noticed but a slight dilatation of the pupil. The parts were antiseptically washed and dressed, and patient placed on her feet, but immediately fell to the floor, as if exhausted. When urged to move she staggered to her feet and moved round the room tossing head first to one side then the other and crossing one fore leg over the other. This continued for about ten minutes, and animal fell to the floor in tetanic twitching of muscles and champ-

ing of teeth; inhalations of ammonia were given but to no avail, and death followed.

Post-mortem revealed nothing but a very flabby condition of the heart with hypertrophy of its walls.

TUBERCULOSIS IN A GOAT.

By A. J. SHELDON, D.V.S., Springfield, Mass.

A pet goat which was kept in a model barn with food and care as good as the best horses receive, showed an indisposition in the early spring.

Instead of the traditional goats' appetite he grew very dainty, scarcely touching oats or bran, and when the grass appeared he nibbled a little but with no relish and at times would eat nothing, but continued to ruminate normally. The writers' attention was called to the animal when this state of affairs had existed about six to eight weeks.

He was somewhat anæmic with a rough, ill looking coat, in which some lice were found. His temperature was $98\ 2-5^{\circ}$, respiration normal, auscultation revealed moist râles in the right lung, but no dullness on percussion except a space about the size of a silver dollar.

There was a slight nasal discharge, opaque and tenacious: mucus membranes pale.

He was placed under observation for ten days and tonics were administered. At times he ate much better but was irregular about it and seemed inclined to stretch himself lazily in the sun. His temperature showed 98° in the mornings for three days, rising to $100\ 2-5^{\circ}$, or thereabouts, in the evening.

He was inoculated on the 19th of the month, at 7 A. M., with 1 cc. tuberculin solution (Bureau of Animal Industry), and at 5 P. M. showed $102\ 2-5^{\circ}$, 7 P. M. $101\ 4-5^{\circ}$, 9 P. M. $101\ 2-5^{\circ}$. The day following (20th), at 8 A. M. $100\ 2-5^{\circ}$, 10 A. M. $100\ 3-5^{\circ}$, 3 P. M. 101° , 7 P. M., $101\ 2-5^{\circ}$. 21st—8 A. M. $98\ 2-5^{\circ}$, 3 P. M. $99\ 4-5^{\circ}$, 7 P. M. $101\ 2-5^{\circ}$.

Post-mortem showed small particles of caseous degeneration here and there in right lung about the size of a pea. In left lung, at apex, a small amount of tubercle. On opening abdomen there was about six ounces of partly coagulated blood immediately behind the diaphragm, and protruding through the walls of the reticulum was a common pin, which had punctured the diaphragm in several places. Hence the capricious appetite, for as the stomach contracted, forcing the pin against the diaphragm, the pain caused him to stop eating and stand in the listless way we had noticed.

EXTRACTS FROM FRENCH JOURNALS.

VAN SWIETEN SOLUTION IN THE TREATMENT OF SUPPURATIVE DISEASES OF JOINTS.

The Revue Vétérinaire of February reports two very interesting cases from the clinics of the Veterinary School of Toulouse, showing the great advantages and rapid results that were obtained by the use of the Van Swieten solution in the treatment of suppurative diseases of joints. The first case, which occurred in the service of Prof. Mauri, was one of suppurative traumatic arthritis of the fetlock, which, from the moment the horse received his injuries to the time he was shown to the clinic, some fifteen days, had gradually grown worse, and was in the most serious condition, with excessive lameness, escape of diseased synovia, lancinating pains, general reacting symptoms, etc. The treatment consisted in free incisions of the fistulous tracts, the application of a coat of blistering ointment all around the joint as a counter-irritant, and repeated injections of the Van Swieten solution (3 quarts per day), every two hours. After four days great amelioration was manifested; five days later the discharge had entirely subsided, the wound was almost all healed, the lameness rapidly disappearing, and, after a short while the animal returned to his owner.

The second case was that of an acute synovitis, following a wound of the sheath of the tendons of the anterior extensor of

the metacarpus. Subsequent to a fall forward, in which a mare had injured her left knee, the parts had become inflamed and swollen; there was a little wound in front of the knee, from which synovia escaped; lameness quite severe. The treatment consisted in free opening of the fistulous tract to allow the pus to escape, thorough antiseptic cleanliness of the parts with the Van Swieten solution, and as perfect immobility as possible of the regions enveloping the joint, with astringent poultices of chalk and vinegar. In five days the synovial escape had ceased, the swelling returned almost to its normal condition, lameness had disappeared, the cutaneous wound was rapidly cicatrizing. In two days she was discharged as cured.—*Rev. Vet.*

ARYTENOIDECTOMY.

BY PROF. A. LABAT.

The author publishes the record of three new cases of that operation performed at the Veterinary School at Toulouse in addition to that of six operations previously performed.

The result of the nine operations is résumé as follows: One recovery that lasted at least nine months; three temporary recoveries, followed at various intervals with the return of the roaring as *severe* as before; *three* failures; *four* improvements and *one* death.

In conclusion, Prof. Labat says that much yet is to be heard before the operation can be considered as beneficial. Claims of success are too often premature, and the publication of cases that have been followed for a long time is urgently recommended. Evidently the operation may give valuable relief when some special favorable conditions are present.—*Rev. Vet.*

CONTAGIOUS DISEASES OF ANIMALS IN AUSTRALIA.

According to Dr. A. Loir, Director of the Pasteur Institute of Australia, glanders is yet unknown in this great island. Rabies, though dogs are in great number, does not exist. Anthrax fever and symptomatic anthrax exist, but are kept under fair control by vaccination. Contagious pleuro-pneumonia has

cost that colony millions of dollars. Preventive inoculation has been practiced there for years. Scabies in sheep was observed for the first time in 1862. Variola is so far unknown in Australia. Strict quarantine of various lengths of time are enforced for all animals before they are allowed the freedom of the island. The duration of this quarantine is 90 days for camels, 60 for bovines, 90 for sheep, 60 for other small ruminants, such as goats, deer, etc., and for dogs, six months.—*Rev. Vet.*

TERPINE AND TERPINOL IN THE BRONCHITIS OF HORSE AND DOG.

BY MR. BISSAUGE.

The author recommends the use of these products in the treatment of bronchitis of animals in the presence of the results obtained in human medicine, where they have been used as a diaphoretic and diuretic.

Mr. Bissauge reports a number of cases, twenty-one in horses and twenty-eight in dogs, where he has obtained thirty rapid and complete recoveries, seven were followed by partial success, and eight failed to obtain relief.

The mixture used for dogs was made up of terpine, 3 grammes, glycerine and diluted alcohol, of each 30 grammes, and of this a teaspoonful three times a day. For the horse, the terpine is mixed up with equal quantities of honey and flower.

Terpinol can be used in the same manner.—*Rec. de Med. Vét.*

DYSTOKIA BY PELVIC INJURY IN THE BITCH—LAPARO-HYSTEROTOMY—RECOVERY.

BY MR. E. MENVEUX.

The case is principally recorded to bring out the advantages of severe antiseptic measures in abdominal surgery.

A bull-dog slut, in a state of advanced pregnancy, was seriously injured by the wheels of a moving van having run over her body. After the accident she exhibited such symptoms

that a diagnosis was made of probable fracture of the pelvis and, with the hope of having her delivered of a valuable litter, she was made as comfortable as her condition allowed and watched. Four days after she was delivered of a dead pup in a state of putrefaction; but she had still another in her womb which could not be removed. It was then that the Cæsarean operation was decided upon, and it is described as follows by the author:

“After a careful washing of the uterus, and emptying the rectum with several injections, the bitch was laid on her back, the inferior wall of the abdomen washed, shaved and well disinfected. One cubic centimeter of a 1% solution of cocaine was injected on the median line, and an incision made; dividing the skin and the aponeurotic plane of the abdomen, on the linea alba, from the umbilicus to about one inch in front of the pubis. With a pointed bistoury the peritoneum was punctured and divided with a canulated probe used as a director. The edges of the wound were secured with the jaws of a strong pair of forceps, which reversed them outwards, and they were covered with a light layer of cotton, moist with a tepid mixture of Van Swieten solution. The abdominal cavity was explored, the right horn found, containing a large emphysematous, putrefying foetus. This, with the placental remains were extracted through an incision made through the walls of the horn, avoiding the blood vessels and keeping the edges of the wound well apart with the forceps, and protecting them also with cotton and Van Swieten solution. The uterine cavity and that of the horn were disinfected, and the wound closed with the Jobert suture. The peritoneum closed with two loose sutures, the wound in the abdominal wall was closed with a deep suture involving the muscles, and a superficial one holding the skin. A dressing of iodoform collodion was spread over the wound and an antiseptic dressing applied all over.”

The animal did well, and with scarcely any complication, and in eight days after the operation was returned to her owner.
—*Rec. de Med. Vét.*

TREATMENT OF THE TAPEWORM IN THE DOG.

BY MR. ARGOUD.

For the author the following mixture constitutes an excellent preparation to relieve dogs from tapeworms:

The treatment is as follows: On the evening preceding it, a very light meal; the next morning a drench of 30 grammes of sulphate of soda in 100 grammes of water, to be followed four hours after with a mixture of the extract of malefern, 5 grammes; sulphuric ether, 10 grammes; simple syrup, 40 grammes. This to be given in two doses, half an hour apart if the patient is weak. Three or four hours after a second laxative of sulphate of soda is given.

The worm is expelled two or three hours after.—*Rec. de Med. Vét.*

OFFICIAL REGULATIONS IN THE USE OF MALLEINE.

BY MR. LAQUERRIÈRE.

At one of the meetings of the Société Centrale in Paris, Mr. Laquerrière read a letter from a sanitary veterinary inspector at Geneva, stating that the Swiss Department of Agriculture had appointed a commission to draw an official regulation relating to the use of malleine as a diagnostic agent for glanders.

The following were recommended and adopted by the Federal Government:

Every horse, donkey and mule belonging to a stable or to a herd of equine, among which one case of glanders should appear, shall be submitted to the test of malleine.

All suspected animals will be also treated in the same way.

All animals will be appraised previous to the injection. Every animal destroyed after the injection and found glanderous shall be paid as indemnity the quarter of its appraised value. If it proves to be free from glanders by the post-mortem, the owner shall receive the entire appraised value.

Mr. Laquerrière recommends the action of the Swiss government to the attention of the French authorities, and asks that similar legislation shall be issued as a means of reducing

the number of cases of glanders and possibly the extinction of the disease.—*Rec. de Med. Vét.*

[While the expectation of Mr. Laquerrière may be exaggerated, there is no doubt that much good may be derived from it, and American veterinarians would do well to appreciate the value of the Swiss regulations in, if not stamping out glanders, at least in protecting the stocks of their employers. Obligatory tests with malleine in large horse establishments imposes itself when one case has been discovered.—EDIT.]

EXTRACTS FROM GERMAN PAPERS.

BY RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

SARCOMA OR LEUCÆMIA.

Almost every year, on a certain farm in Saxony, one, at least, and some years several colts died of a stubborn bronchial catarrh. The post-mortem in each instance invariably exposed, beside a chronic catarrh, from six to thirty bodies which followed the bronchi in their ramifications; these varied in size from a cherry to a walnut, and when transversely cut presented a fatty surface with a yellowish-white hue.

In one case the lung was nearly obliterated by the aggressive usurpations of these tumors; in this particular foal swellings were also found in the mesentery of the small and large intestines. The enlargements in the lung were diagnosed as multiple sarcoma by the veterinary university. The agricultural department of the University of Leipzig decided the same to be the "usual swellings which accompany chlorosis."

The author examined the blood of two subjects which, a short time after the above decision, came under his care, and came to the conclusion that the affection was leucæmia, from the preponderance of the leucocytes present. He prescribed the following:

℞ Liq. potas. arsenici 3 iiss.
Tinct. ferri ʒ ii.

M.

Sig. Half teaspoonful twice daily.

The result was most happy and astonishing; the catarrhal symptoms disappeared, patient became lively, and at the termination of a fortnight the more alarming effects had vanished. The medicine was dropped for a time and again, later, given. No swelling of the spleen was observed.

ESERIDINE FOR CATTLE.

The first article of Eher's, upon eseridine, was not sufficiently exhaustive to introduce this agent in veterinary practice. The difficulty which he at that time experienced regarding the solubility of the substance, has now been obliterated, and without the use, also, of diluted sulphuric acid solutions. He has found that two parts of eseridine and one of ac. tartaricum make a clear solution in one hundred parts of water.

The solution eseridine tartaricum is specially adapted for injections, since it induces no lesions at the point of application, and operates precisely as other solutions made by Ebers by the use of sulphuric acid.

The firm of Bölinger & Son has prepared, therefore, the E. tartaricum instead of the E. purum; the former is in doses of $4\frac{1}{2}$ grains, and is doubtless obtainable through the house of Eimer & Amend, New York.

This medicine has been experimentally and practically used by Ebers, who recommends it as invaluable in all those diseases involving cessation of the pansen movements, *i. e.*, ruminations; he finds no other agent which he may use with more certainty of specific action. Felser has affirmed the same opinion in the annual report of Munich.

The application is to be made subcutaneous. After 15 or 20 minutes the contractions commence, and continue for two or three hours, occasioning incidentally the disappearance of any tympanites that may be present. About one-third of the patients show a diarrhœa one hour after administering; some cases exhibit slight involuntary muscular twitchings. In heavy oxen $4\frac{1}{2}$ grains are given; cows receive 3 grains; in a nine-months'-old heifer $1\frac{3}{4}$ grains were sufficient.

In exceptional instances the good effects of restored ruminations were but temporary; in four cases the eseridine had opportunity to induce abortion in cattle, but nothing assuming such an occurrence was noted.

Eseridine resolves itself entirely into a symptomatic application, used principally to combat inhibition of the second stomach.

In flatulent conditions its action is materially aided by rectal injections of sod. chlor. and sod. bicart; much water, little hay and no green food. In three days, if the amount of water imbibed is still small, puncture of the pansen is advised, and by a rubber tube 20 to 25 quarts of tepid water, mixed with $3\frac{1}{2}$ ounces æther, is to be introduced into the organ.—*Wtsch. f. pract. Th. Bv. Hii.*

PETROLEUM IN THERAPEUTICS.

The question of the medicinal value of coal oil, or rock oil as it is sometimes called, is in nowise a new one. Lucas, as early as 1808, records its use externally and internally.

In modern times it has been used internally for diarrhœa, in Russia, during the prevalence of the cholera epidemic in that country. Its action in favus is universally known. Larchner and Flanhof have lately used it in diphtheria with good results. According to Bardet and Adrian, petroleum is a conglomeration of substances which differ essentially in their peculiarities. The American variety contains the lesser order of carbohydrates, and is not so viscid or oleaginous as the Russian product, while that obtained from the Caucasian contains more combinations of the ethyl series. Regarding the therapeutic values of these, it may be said that they do not practically differ.

Three years ago Vigier published his experiments upon its uses in diphtheria; and then affirmed that the raw, or unrefined, was preferable as a solvent for the pseudo-membrane to the commercial variety, or common coal oil, of the stores.

In veterinary science petroleum has failed to supply any need; although applied as an antipariseticum, its action is un-

worthy of remark. There is, however, one very noteworthy characteristic of this abundant and cheap material, which the observant practitioner cannot afford to overlook, and that is its power of passing through animal membranes. It furnishes to us an admirable remedy, when applied crude, for the prevention of brittleness of the wall and sole of the foot. And in such cases may be applied with more *real* benefit than the majority of extant hoof remedies.—*Allg. med. Centralst.* 62.

SCIRRHUS CORD IN OXEN.—Roeder has frequently seen this affection follow a carelessly performed castration. Free incision of the scrotum permitted the escape of accumulated pus, and conscientious injections of disinfecting agents produced a cure in some cases. In two instances the ends were laid bare and light clamps were adjusted thereon. The best results are obtained by exposing the stumps, and amputating as far up as possible, ligating the vessels and disinfecting.

CUTANEOUS EMPHYSEMA.—In a heifer a wound was made upon the vulva during the operation incident to removal of an anasarcal calf. By the third day the animal was deformed along the inferior and lateral portion of the body, by a subcutaneous emphysema extending from the vagina to the cervical region. The general constitution was not prejudiced thereby; after the lapse of nine days, the same commenced to recede, and after four weeks only minute crepitations could be detected at the breast.

OSTEOPOROSIS.—Several foals belonging to a miller, and receiving rations of bran, became affected with an exostosis of the feet and joints, accompanied by swelling of the maxillary bones and narrowing of the nasal caliber. A few of the more benign cases recovered upon removal to different surroundings. As an experiment, two foals were fed upon bran and hay, and two upon oats and hay; after a time the same symptoms appeared in the former while the latter remained immune.—*Archiv. f. wiss. u. pract. Th.*

FLUOR ALBUS.—A cow had become greatly reduced in flesh by the continuous and uninterrupted discharges incident to leucorrhœa. Roeder introduced a catheter and thoroughly flooded the vaginal cavity with thymus serpyllum. After three days he again introduced a 5% solution of alum, which he repeated one week later, allowing it to remain in the cavity. The animal exhibited symptoms of abdominal pain about ten hours afterward, and by straining caused the expulsion of a small quantity of the solution which had not been absorbed. Recovery followed rapidly and completely.

REVIEW OF BIOLOGY.

UPON THE MORPHOLOGICAL VALUE OF HORNS IN HORSES.

By Mr. L. BLANC.

Horns in horses are constituted by a skeleton base covered by a normal, or horn-like skin. These appendages are situated on the frontal bone, inside the base of the orbital process, about the frontal foramen, at a point corresponding very nearly to the place of the horns of ruminants of the ovine type.

The skeleton axis is formed by a cartilaginous nucleus which is ossified in animals advanced in age; crescent in shape, with the concavity inward, projecting, or almost on a level, with the frontal, in which it is imbedded as a tooth in its alveola.

Most ordinarily the ligament is normal, round, and on a level with the horn. Sometimes the epidermis undergoes the horny transformation, and then there is a conical envelope, two or three centimeters long, fibrous in appearance, and having the structure of the young horn of the hoof of horses.

These horns are not, by their axis, part of the frontal; they belong to the primordial skeleton of the cranium, and are formed by the extremity of the apophysis of Ingrassias.

On any colt, the wing of the anterior sphenoid is continued outwards and upwards by a cartilaginous lamella, fan-shaped. This lamella penetrates into the depression of the orbital portion of the frontal, then, a little more upwards, goes into a deep

groove, hollowed between the two plates of that bone. The apophysis of Ingrassias, yet cartilaginous, penetrates also in the frontal and reach in contact to the external lamella, which it closes with the summit of its convexity. Sometimes it perforates the frontal, appears at the superfcy, and the horse has a horn.

This cartilaginous lamella is not contained entirely in the thickness of the orbital portion of the frontal. Its anterior half extends in the frontal sinus, where it forms a band entirely surrounded with bony tissue; this band is found in all subjects, even the oldest.

When the animal gets old the extremity of the apophysis of Ingrassias ossifies little by little from the center to the circumference. In horses that have horns, aged three or four years old, one finds in the frontal a bony conical wedge, surmounted with a cartilaginous nucleus and enlarging the wing of the anterior sphenoid. At this moment these pieces are perfectly distinct from the frontal, though intimately united to it later on.

The axis of the body of the horse belongs then to the primordial cranium; it is formed by the summit of the wings of the anterior sphenoid, which are surrounded by the frontal at the time of the formation of that bone.

The similitude of position which exists between the horns of horses and those of ovine ruminants allows us to believe that there is similarity of origin between these appendages. In sheep, goats and like ruminants the part of the frontal where horns develop is exactly on a level with the summit of the wing of the anterior sphenoid. In bovines, the point of insertion of horns is higher up in relation to the sphenoid; but the elongation of the frontal is a character which is not found in all the periods of foetal life, and towards the fourth month of gestation the keratogenous point is exactly in the same situation, in relation to the sphenoid, as it is in ovine ruminants and in horses.

The question might be asked, if the horns of ruminants, which to this day have been considered as depending from the frontal, have not for a starting point, as in horses, the wings of the anterior sphenoid.—*Soc. de Biology.*

THE EXISTENCE OF A STRYCHNIZING SUBSTANCE IN THE MUSCLES OF TETANIC ANIMALS.

BY N. H. J. COURMONT and N. DAYON.

The muscle made tetanic by the subcutaneous injection, intra-muscular or intra-venous, of soluble products of the bacillus of Nicolaier (after a constant period of incubation) contains a *strychnizing* substance—that is, one which can give rise to *contractions without incubation*. The chemical isolation of this substance is most difficult, but it is possible to obtain it with a simple *aqueous extract*. This is prepared with the muscular mass of the region in contraction. The muscles are freed from all grease and hatched very fine; to the mass water is added, and is exposed to ebullition for forty-five minutes to an hour, until it is dried up. The remains are watered again, pressed and filtrated. The liquid thus obtained is then injected into the frog, better under the skin of a hind leg, so as to have the first contractions more apparent.

According to the dose used, the frog will present either a simple hyperexcitability or a true *strychnism*, or a short period of excitability, soon followed by paralytic coma and death. From five to seven grams of tetanic muscle have given, to the authors, most marked effects. In that condition one can for several hours, if the animal lives, observe symptoms similar to the strychnia poisoning.

The extracts can contain any trace of the soluble products of the bacillus of Nicolaier, as these are made inactive by a heating at 65° F.

The extract similarly obtained from the *muscles of a normal dog* is toxic to the frog except at high doses (some 20, 30 grams of muscles or even more), and never produces phenomena of excitation.—*Ibid.* —————

ACTION OF TUBERCULINE AND OF MALLEINE UPON THE SUDORAL SECRETION.

BY M. M. CADIOT and ROGER.

Horses and cats which perspire easily were injected with tuberculine and malleine. From the effects produced, the following conclusions are derived:

Tuberculine is without apparent action upon the sudoriferous apparatus.

Malleine, on the contrary, produces in these animals a diaphoresis varying, more or less, according to the dose injected, and so much more abundant that the injection is larger.

The sudation cannot be attributed to the hyperthemia; it is due to an action produced by the microbic product upon the nervous centres; proof of it is, that a section of the sciatic nerve in the cat, done previous to the injection, will prevent the manifestation of sudation of the unnerved extremity.—*Ibid.*

PNEUMO-BACILLINE AS A REACTIVE AGENT IN GLANDERS.

BY M. S. AROLING.

It has been shown that the products of cultures of some microbes, besides the bacilli of Koch, would give strong reaction in tuberculous subjects. The author has thought what would be the effect of the products of cultures of the *pneumo-bacillus liquefaciens bovis*, or the *pneumo-bacilline*, in the diagnosis of glanders, and whether its effects would not be similar to those of malleine, taking into consideration the pyogenic effects it has in healthy cattle as well as on those affected with chronic pleuropneumonia.

Eight horses affected or suspicious of glanders, received comparative inoculations of malleine and of pneumo-bacilline. The thermal reactions were much the same, much higher in really glanderous patients, less in suspicious. In one case only, which proved glanderous at post-mortem, was there any notable difference. Pneumo-bacilline may, therefore, be used in place of malleine.—*Rev. de Biol.*

SOME NEW EXAMPLES OF TUBERCULOUS VACCINATION IN DOGS.

BY M. M. J. HERICOURT and CH. RICHET.

Confirming previous experiments already published, the authors reported some new cases which bring them to the conclusion that: First, vaccination can be obtained, in the dog at

least, against human tuberculosis, either with the use of aviary tuberculosis or with small doses of the human products of the disease. Second, that the defectuous part of the experiments, is the serious nature of these processes of vaccination themselves, which generally are accompanied by a mortality of about 50%.

In the point of view of immediate medical application these results are of no value, but they prove that tuberculosis is an affection which admits of vaccination, a fact which justifies great hopes which merely rest on the discovery of an inoffensive *modus operandi*.—*Ibid*.

COLLEGE COMMENCEMENT.

McGILL UNIVERSITY—DEPARTMENT OF COMPARATIVE MEDICINE
AND VETERINARY SCIENCE.

The commencement exercises were held on Friday, March 30, 1894, and the following passed their examinations in the order of merit given here:

C. French, J. A. Buchan, B. Anderson, A. H. Hall, J. D. McGillivray, A. Cameron, G. P. Baker, A. E. Moore, C. J. Carey, J. V. Solandt, D. McAlpine, R. H. Grattan, J. R. Shaw, J. H. McLeod, R. H. Cleveland, I. L. Salley, J. T. Walsh, C. J. Mulvey, R. Thomas and T. F. Scott. Dr. C. French carried the prizes on Veterinary Medicine and Surgery, on Cattle Pathology and best general examination.

SOCIETY MEETINGS.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The semi-annual meeting will be held at Indianapolis on the 9th and 10th of July, at the agricultural rooms of Capital Building.

A very interesting meeting is anticipated, as several papers of importance are to be read, and the Governor of the State has promised to deliver an address at the evening session of the 9th.

SUNDRIES

ACTINOMYCOSIS.—The transmissibility of this disease to animals by direct inoculation has been studied by Professor M. Wolff and Dr. J. Israel, who have succeeded in making pure cultures from a case of actinomycosis hominis by sowing the granules on agar kept at 37° and devoid of air. The microbe is considered to be an anærobe, yet a small quantity of oxygen does not prevent its growth. It grows very well in alkaline bouillon. The microscopical appearance of this microbe is said to be very variable—short and long rods, simple, straight and branching or wavy filaments, cocci, and felt like masses are seen. The cocci are found free, but more frequently within the rods or filaments. The authors refrain from expressing a definite opinion as to their exact nature, but do not regard them as spores. They stain well by Gram's method. In none of the cultivations were club shaped elements met, but by injecting these cultivations into animals, tumors containing club shaped bodies were produced. Twenty-two animals were inoculated with the agar cultivations, and in all except one (a sheep) actinomycotic tumors were developed.—*Medical Record*.

TUBERCULOSIS IN THE DOG AND CAT.—Eber has made autopsies upon 400 dogs and 100 cats to discover whether tuberculosis was present, and found it in eleven of the former (2.75 per cent.) and one of the latter. The anatomical diagnosis was in every case established by microscopical examination for the tubercle bacilli. In nine of the eleven dogs the lung was the organ chiefly affected. The disease manifested itself in eight cases in the form of chronic indurating broncho-pneumonia with central softening of the newly formed tissue. There were also complications in the form of chronic bronchitis with bronchiectatic cavities as well as pleurisy, pericarditis, and hydropic collections. The bronchial and mediastinal lymph-glands showed only in two cases distinct tubercle formation; in the remaining cases they were

hyperplastic only, or showed no changes. No changes were demonstrable in the mucous membrane of the intestines. The product of tuberculosis in dogs showed a peculiar sarcoma-like condition, in which were numerous soft masses, containing pure cultures of tubercle bacilli. In the cat chronic tuberculosis of the lungs and related lymph-glands was observed. Eber shows by this that the distribution of tuberculosis in the dog and cat is not everywhere as great as in Copenhagen and in Denmark generally.—*Medical Gazette*.

CORRESPONDENCE.

ONTARIO VETERINARY COLLEGE.

To the Editor:—

SIR:—In your report of the second day's session of the Pennsylvania Veterinary Medical Association, dated March 7, 1894, Dr. J. A. Waugh calls attention by letter to an advertisement which, he says, was published in the *Spirit of the Times*, dated Dec. 3, 1893, of the Ontario Veterinary College advertising for students for a term of three months.

The letter was referred to the Board of Trustees who, report

“That we deprecate the action of the Ontario Veterinary College, and recommend that this association censure the faculty of the said college for abbreviating the course of veterinary education.”

“The recommendations of the board were received.”

I enclose the advertisement of the Ontario Veterinary College in the *Spirit of the Times*—there has been no change in it

ONTARIO VETERINARY COLLEGE,

TORONTO, CAN.,

In connection with Agricultural and Art Association.

Established 1862.

Session of 1893-94.

All experienced teachers.

PROF. SMITH, V.S., Edin., Toronto.

An editorial notice which, by the way, was not put in by any one in connection with the college, appeared in the *Spirit of the Times* Dec. 2, 1883. Although the faculty are not in any way responsible for this editorial, yet I think that no fair-minded man can possibly place upon it the construction which seems to have been assumed.

The length of time of the Ontario Veterinary College is two full sessions, and students are required to practice the greater part of the summer under a qualified practitioner. At the expiration of his last session, a student is entitled to go up for his final examination.

The censuring of the faculty of the Ontario Veterinary College was apparently passed simply on the unsupported evidence of a letter, the writer of which has evidently a most elastic imagination. And is it creditable for a body of scientific men to accept conclusions without verifying the data upon which they are based?

C. M. SWEETAPPLE, V.S.,
Professor of Obstetrics and Cattle Pathology
Ontario Veterinary College.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

To the AMERICAN VETERINARY REVIEW:—

Owing to the fact that it has not been feasible to convene the congress during the past winter session of the various veterinary schools, after thorough consideration the Committee on Congress of Colleges have decided to call a meeting of the same at Buffalo, N. Y., on Saturday, July 14th, and notice is hereby given to all veterinary colleges, and it is hoped that by fixing this time that all will be prepared to send delegates to consider the subject of Veterinary Education in this country.

By order of the Chairman,

W. HORACE HOSKINS, *President.*

AMERICAN VETERINARY REVIEW,

AUGUST, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

ANOTHER IN THE RANKS.—In several numbers of the REVIEW we have urged the necessity of the various steps which, in our opinion, were the most important to raise the standard of the veterinary profession. We have often and again said how, by the organization of a board similar to that which exists in Great Britain—a Board of Examiners, in other words—the education would have to be improved, the requirements and the curriculum of schools increased, and, as a consequence, a degree of superiority among veterinarians which would prove a great benefit to all who may be in need of their services.

It is true, we asked that this Board of Examiners be national; but we were too anxious. Above national interests there are State Rights, and these, it seems, cannot at present permit of a national organization having for its duty the qualifying of persons who shall be guardians of our national animal wealth.

But our advice was not altogether erroneous, and a State Board of Examiners will, for the present, do very well. They will open the ground for the creation of a higher board, and if, for the present, they will only tell who shall or who shall not practice veterinary medicine, a day will also certainly come when they will take direct part in the examination for graduation at the veterinary colleges, and a day will certainly come when they will unite to decide as to a uniform title or degree for one and all of American veterinarians.

In the REVIEW of last month we published the act which in Virginia created the State Veterinary Medical Board. In this issue we give the bill passed in Ohio establishing the State

Board of Veterinary Examiners, which was sent to us by Dr. H. M. Ball, of Columbus, and among the various sections which the bill presents, we will call the attention of our readers to Section 4, which regulates the organization of the Board, and Section 9, which puts a pretty strong check on the future growth of some of our two-year diploma mills.

NORMAN BOVINE RACE.—Our remarks in the June REVIEW upon the superior quality of this French breed, which has been suggested to us to take the place of the fashionable and excellent cows which, after having been such a favorite among our people, is unjustly losing its reputation because of the extensive presence of tuberculosis among them, have brought us a large number of inquiries upon the Cotentine cow—her milking qualities, her endurance, size, etc., and to answer these letters in a rather concise manner we reprint a short article from the pen of a gentleman who has owned, for his pleasure, Norman cows for some time, and who merely writes because of his thorough belief in the qualities which he considers will soon be the favorite milking cow of our wealthy owners of cattle in their large and fancy dairies.

THE EXTERNAL CONFORMATION OF THE HORSE.

BY PROF. E. A. A. GRANGE, V.S., Michigan.*

Some time ago the veterinary department issued an advance bulletin having reference to the external conformation of the horse, in which some scales of points were presented, and those interested were asked to make such changes as to them seemed proper and best. The hearty response which met the request has been most encouraging; while the replies furnish much valuable information, of which advantage will be taken when we come to that feature of this issue that bears upon the scales of points.

Numerous communications have also been received commending the work of research upon the different styles of

*A Reprint from Bulletin 110—Experiment Station, State Agricultural College.

conformation met with in commercial horses of the present day, and many correspondents express a keen desire to be informed on all points in connection with the subject of this bulletin.

Before describing the points of the animal it may be well, first of all, to define the expression we so often hear, "*a good horse!*" and will do so by saying that associations have led us to regard *a good horse* as one which excels in many ways, fails in few, and is not remarkably deficient in any point. Of course that is treating the question somewhat broadly, for some horses are able to trot at a very high rate of speed, and are regarded as good horses by those who look upon speed as the chief feature in their ideal animal; yet these same animals may be affected with forms of unsoundness that would cause them to be rejected in any show ring, and the same may be said of horses used for the performance of any special duty.

I do not think it makes any particular difference where we begin with the description of a horse, for if we do the work thoroughly we eventually cover the whole animal; but as it has always been our custom, in work of this kind, to start with the head we will continue in that line here; indeed, in some respects the head may be regarded as the frontispiece of the animal, it being the feature above all others which imparts the physiognomy or expression to the creature.

The head may be divided for the convenience of description into the following regions, *viz.*: The ear, poll, forehead, face, nostrils, muzzle, mouth, cheek, eye, lower jaw and jowl, intermaxillary space.

The ears (Plate II. Fig. I-I) are situated towards the sides of the top of the head, and, like many other parts of the horse, are subject to differences of opinion in the minds of individual horsemen as to their proper size and shape, as well as to their position upon the head. Some like what they call good large ears set well apart, while others prefer much smaller ones and made up in a more delicate manner throughout. As far as our own observation has gone, the ear which has most admirers is

the one which is composed of a mere shell, or grisle, enveloped in a layer of thin skin, which should be clothed in a coat of fine hair, that may, however, be somewhat meagre on the inner surface, especially in the summer season.

In shape the ear should taper from the base to a rather sharp point at the tip; its movements should be energetic, but not of the quick, jerky order; they should not be slow or sluggish, because that would indicate a defect in hearing, or the animal is quite likely to be a dull, stupid brute, while those with quick jerky ears are liable to be vicious or ultra-nervous creatures.

Experience in selecting horses has led us to observe the movements of the ear with much care, and regard them to some extent as the index to the animal's character, for they not only indicate a well-balanced disposition, a vicious or sluggish horse, as the case may be, but they point to defective eyesight, or even total blindness, in which case the ever restless ear will be thrown first in one direction and then in another.

The position of the ears upon the head plays an important part in the artistic appearance of it; if they are too near the center they cause a disagreeable, puny expression, while if they are too close to the lateral borders they give the head a somewhat coarse expression. When erect the ears should stand boldly up, inclining in an oblique direction, from below upwards and forwards; when they project in an outward direction, approaching the horizontal, they are called lop-ears, a style of conformation that is not admired.

The poll (Plate I, 3) is situated at the top of the head (being covered in part by the arch formed by the headstall of the bridle or halter), its shape is not often criticised, though we occasionally meet with saddle horses that are injured from the artistic standpoint owing to the poll being flat and expanded, giving the upper superficies of the neck and back of the head a plain, coarse look, and as this feature is practically always under the eye of the equestrian, it is very liable to diminish the value of the animal in the high-class saddle horse market.

The forehead (Plate II, Fig. 1-2) is that part of the head between the eyes, extending as high as the top of the cranium, the superior border affording a point of attachment for the forelock; the upper portion forms a large part of the wall of that cavity which contains the brain, while the lower portion forms the forehead proper, a space that is most admired when it is broad and flat.

Connoisseurs in horse-flesh prefer plenty of space between the eyes, and some even go so far as to say that a broad forehead is indicative of intelligence, but as this part of the bone does not cover the brain (the seat of intelligence) it is hard to conceive how its shape can control such an important feature in an animal. When the space between the eyes is well developed that portion of the interior of the head to which the nerve of special sense of smell is distributed would naturally be larger in proportion, on that account the smelling power of the animal with the broad forehead may be increased, and if it be true that the horse is capable of judging of the quality of things by their odor, we can then explain why the horse with the broad forehead and well developed organs of special sense of smell may appear more intelligent than his less fortunate neighbor with the narrow one.

In some instances the forehead is convex in outline, a style of conformation which is not regarded with favor from an artistic point of view, though it is not likely to interfere with the animal from the practical standpoint.

The face (Plate II, Fig. 1, 3-3) is the region situated below the forehead, the bones of the nose forming the principal part of it. The outline of the anterior aspect of the face should be straight or nearly so, causing the nose to be rather of the Grecian order; the sides of the face may be very slightly dished. The bones of the nose are often arched, a style of conformation that is not only unpopular, but in the extreme it may interfere with respiration during severe exertion, owing to the peculiar attitude the soft tissues, which form the nostrils, assume when hanging loosely from such bones, and their position makes it

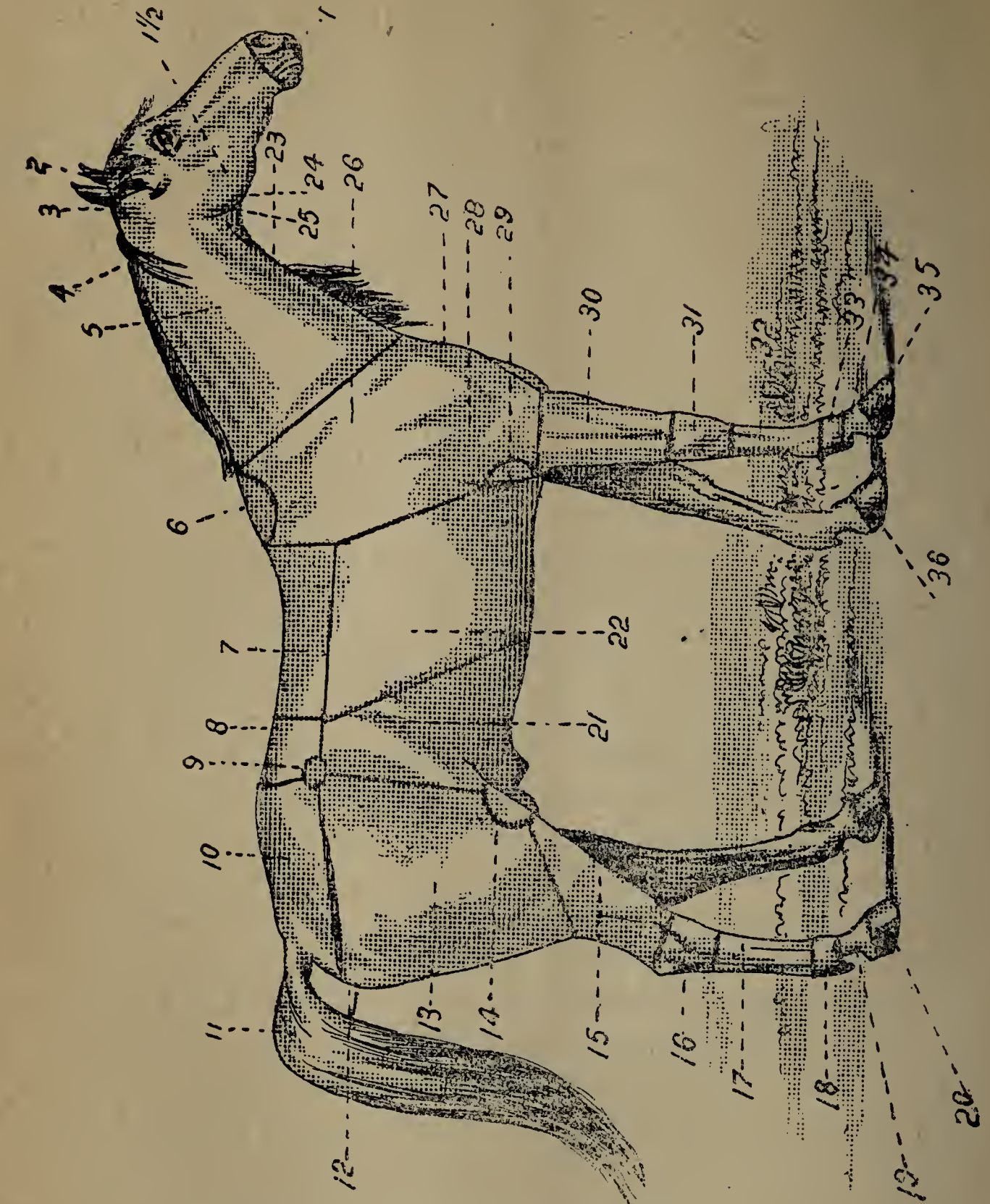


PLATE NO. 1.—REGIONS OF THE HORSE.

- | | | |
|----------------------|---------------------------|---|
| 1 Muzzle. | 13 Haunch or upper thigh. | 25 Throat. |
| 1½ Cheek. | 14 Stifle. | 26 Shoulder. |
| 2 Crest of occiput. | 15 Gaskin or lower thigh. | 27 Point of shoulder. |
| 3 Poll. | 16 Hock. | 28 Arm (from point of shoulder to elbow). |
| 4 Crest of the neck. | 17 Shank. | 29 Elbow. |
| 5 Neck. | 18 Fetlock joint. | 30 Forearm. |
| 6 Withers. | 19 Hind pastern. | 31 Knee. |
| 7 Back. | 20 Hind foot. | 32 Front canon. |
| 8 Loins. | 21 Abdomen and flank. | 33 " fetlock. |
| 9 Point of hip. | 22 Chest. | 34 " pastern. |
| 10 Croup. | 23 Jugular gutter. | 35 " foot. |
| 11 Dock and tail. | 24 Jowl. | 36 " coronet. |

difficult if not impossible for the muscles which control them to act in a proper manner. Again the bones of the nose are sometimes concave, giving the animal a dish-faced appearance, which in extreme cases may also interfere with respiration, by decreasing certain diameters of the nasal chambers, but it is only in very rare cases that the merits of the animal are affected by the shape of the nose; notwithstanding this, however, the shape of the nose is a very important point, for it goes a long way in giving a pleasing or disagreeable expression to the head.

The nostrils (Plate II, Fig. 1, $4\frac{1}{2}$ - $4\frac{1}{2}$) are the external openings of the nasal chambers; they are composed largely of a fine skin and cartilage or gristle, and lined by a delicate membrane which in health and during repose should be of a rose pink color; exercise or disease alter the color of this membrane considerably. The openings should be large and easily dilated; if they are small and composed of thick tissues which do not dilate readily, the horse will most likely prove defective when it comes to severe exertion.

The muzzle (Plate I, 1) of the horse is a region somewhat indefinitely spoken of as the end of the nose, but to define its limits I regard it as that part of the head extending from an imaginary line drawn around the lower portion of it and in its course passing over the angle of commissures of the mouth, all below this line to be included in the muzzle. The outline of this region does not seem to make any difference to the animal as far as its merits are concerned, but from the artistic standpoint it must not be coarse and expanded, but fine and inclined to be pointed; to express this some horsemen say the animal "should be able to drink out of a wine glass."

The mouth splits the last region into two parts. It should be of moderate size, not deep enough to remind one of the mouth of an alligator, nor so shallow that it resembles the mouth of a sheep; it should be bounded, as it were, by moderately firm lips. We do not think that its size or shape has anything to do with the general utility of the animal.

The cheek forms a large portion of the lateral aspect of the

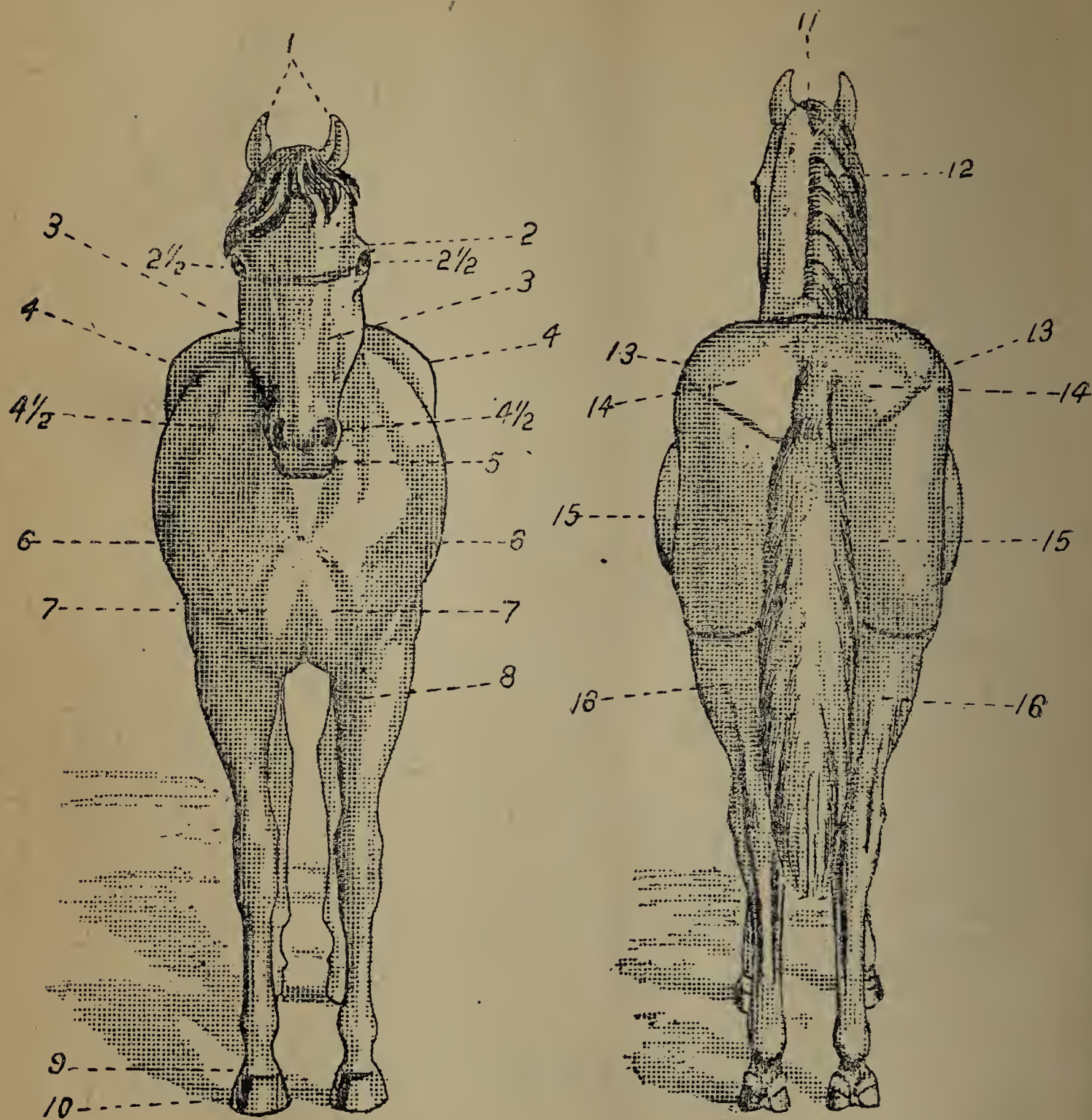


PLATE NO. 2.—REGIONS OF THE HORSE.

- | | | | |
|-------|----------------------------------|-------|---------------------------------|
| 1 | Ears. | 8 | Forearm. |
| 2 | Forehead. | 9 | Coronet. |
| 2½.2½ | Outside points of the forehead. | 10 | Wall of the foot. |
| 3.3 | Face. | 11 | Crest of the occiput. |
| 4.4 | Points of hips from the front. | 12 | Crest of the neck. |
| 4½.4½ | Nostrils. | 13 | Points of the hips from behind. |
| 5 | Muzzle. | 14.14 | Croup from behind. |
| 6.6 | Points of shoulders. | 15.15 | Haunch or upper thigh. |
| 7.7 | Muscles forming breast of bosom. | 16.16 | Gaskin or lower thigh. |

head. As we believe that this region of the head deserves more attention than it usually receives, a word or two concerning its anatomy may not be out of place here. It is composed of an outside covering of skin and hair, and an inside layer of a skin-like mucous substance called *buccal membrane*; between the skin and the membrane we will find two muscles which are especially worthy of our attention. The first one, called the *buccinator*, occupies that portion of cheek nearest the mouth, which is loose or flabby. This muscle is of interest because it is largely concerned in keeping the food in its proper place during mastication, by pressing it, as it were, between the molar teeth, which, figuratively speaking, are the mill stones that grind the corn, etc. The next muscle may almost be looked upon as being of more importance than the first, for again, speaking figuratively, it supplies the *power* which drives the mill stone; this muscle is called the *masseter* (one on each side of the head) and is situated upon the upper or posterior half of the cheek. It is firmly attached to the upper and lower jaw and is the principal muscle of mastication, and as this is one of the important processes of digestion it must be thoroughly performed, or the animal will not remain vigorous or in a state of perfect health. We believe that imperfect mastication, or grinding of the food, is often the starting-point of indigestion and all its evil consequences, hence, that this act be properly performed, the *masseter* should be well developed, and we like to see them standing boldly out upon the cheek.

The eye is a most important part of the head. It is regarded as being defective from an artistic point of view when it is small and concealed, reminding one of the eye of a pig, or when it is too large, round and prominent, like the eye of an ox. It should be well developed, round, and preferably of a brown color.

When there is an absence of the coloring matter of the eye, it will be very light colored, in appearance which usually goes under the name of (watch) *wall eye*.

The eye is frequently regarded as the index of the animal's

character, but I have been deceived so often by both kinds, the mild as well as the sulky looking, that I am now disposed to think that it is often over-estimated as a guide for future performances.

The acuteness of vision may be determined by making passes with the hand in front of the animal, in proximity to the organ, examining one eye than the other, taking care that too much force is not exerted, as currents of air may be produced which will cause the animal to blink, and this blinking mistaken for actual vision.

The lower jaw is composed principally of a large bone, the front part of which forms a solid foundation for the implantation of the lower incisor teeth. This part is called the body, and springing from it are two large rami or branches; the branches turn suddenly upward toward the base of the ear, near which they form the joint of the lower jaw.

The angle of inflection is often designated the jowl (Plate I, 24). This point if coarsely constructed, through the bone being too broad, is sometimes taken exception to, and the animal criticised for being too thick in the jowl, or is occasionally called heavy-jawed.

The inter-maxillary space is the V shaped channel formed by the spread of the branches of the lower jaw. The channel should be deep enough to make its presence quite perceptible. When the groove forming the channel does not exist, owing to the space being filled with thick skin or other soft tissue, the head has a beefy look, as it is called, a style of conformation that is disagreeable.

The inter-maxillary should be broad between the angles of the jaw in order that the top of windpipe (*the larynx*) may have plenty of room for its eccentricities in all attitudes of the head.

The head should be attached to the neck in a manner that a line drawn through the centre of it will form a right angle with a line drawn along the center of the neck, when the animal is standing in its natural position. When the angle is more obtuse than a right angle, causing the nose to protrude, the horse al-

ways appears as if suffering from a sore throat; or if the angle is still more obtuse, it will resemble the attitude assumed in chronic poll evil; on the other hand if the angle be considerably more acute than a right angle the act of respiration may be interfered with during extreme exertion. A head that is not nicely set upon the neck deteriorates the value of a high class horse considerably, although it may not interfere with the merits of the animal.

It is somewhat difficult to say, in a general way, how the head of one class of horses should differ from that of another; all for instance are entitled to the fine ears, the broad forehead, the straight nose, etc., etc.; at the same time a coarse ear, which might be tolerated in a draft horse, would more than likely be taken exception to in the thoroughbred; then heads are coarse or fine in all breeds without apparently affecting the merits of the animal, but the same cannot be said of the neck which is the region of the horse next to be described.

The neck (Plate I, 5) may be regarded as the part extending from the poll to the withers along its upper border, and from the throat to a point a little above the anterior extremity of the breast bone on the lower border. In all breeds of horses we meet with different kinds of necks that are named from their supposed resemblance to certain objects, but the kinds we oftenest meet with are the bull neck, the peacock neck, the ewe neck, the straight neck and the clean cut neck.

In selecting a horse the form of neck must be taken into consideration, and the kind of work the animal is to be engaged in, before we pronounce upon it as being good or bad in form.

The bull neck is the one which is strikingly short and thick; it is usually credited with being indicative of strength and consequently is best adapted for draft horses, but even in them it is doubtful if it is advisable to encourage the breeding of horses with short necks, for innumerable draft horses have been brought under our noses with moderately long necks and we have yet to learn that they were deficient in strength when it came to the starting of a load. The bull necked horse would certainly not

do for saddle purposes because he would not be graceful in his movements, and men who ride high class horses, like them with plenty of rein, in order that they may be handled in a more agreeable way; it is not a pleasant thing to have the horse's head too near you when in the saddle.

Those who drive generally prefer the rangy neck to the short variety for similar reasons.

The peacock neck is one which usually has many admirers; the name is given to it from the supposed resemblance to the neck of that bird. The style of conformation is occasioned by the upper border of the neck (*the crest*) becoming somewhat elevated or unusually prominent about six inches from the poll; they are found in all kinds of horses and, while they do not indicate anything of special value in the line of merit, they are coveted on account of their beauty.

The ewe neck is one in which the upper border is concave instead of being convex and the lower border bulges more or less, giving rise to the expression, "that neck is upside down." Many good horses are formed in this way, though it is a form that is often objected to, more from its appearance than anything else we are aware of.

The straight neck is one in which the upper and lower borders are practically straight, tapering gradually from the chest to the throat; we find this style both in good and bad horses.

The clean cut neck is the one our preference leans towards; in it the muscles and other parts stand boldly out, the crest is prominent and whipcordy or wiry, the sides are marked by hard muscles, the lower border including the windpipe, stands out perceptibly leaving a prominent groove, the jugular gutter, between it and the neck above, gracefully incurvated near the throat and attached to the head in a manner that leaves a line of demarcation between the leaving off of the head and the beginning of the neck, doing away with the appearance of a *plastered on* head. The posterior part usually terminates perceptibly just in front of the withers, so that one can tell where the neck leaves off and the withers begin, a point that is not always easy to determine.

Necks of this nature are usually accompanied with a constitution that can stand a good hard day's work either upon the road or at the plow.

The body is the next division of the horse to be considered, and in order that it may be discussed somewhat in detail it is conveniently divided into the withers, the back, the loins, the croup, the chest and breast, the abdomen; other parts which may be looked upon as parts of the body are left to be considered with the limbs.

(To be Continued.)

ORIGINAL ARTICLES.

A DISCUSSION OF THE REPORT ON VETERINARY EDUCATION.

BY PROF. OLOF SCHWARZKOPF, V.M.D., Chicago, Ill.

(Continued from page 280 and Concluded.)

Much may be said in regard to an advancement of our professional education, but in order to do real good we had better confine ourselves to a few principal points and leave side issues for the future. Inasmuch as the education of professions is not dependent in this country from fixed rules and regulations of the national government, we will have to battle with as many different opinions as there are colleges. At present each college, or at least its graduates, firmly believe that theirs is the only one and the best in the world. I have heard such utterances so often and always spoken with such conviction that I am sure it will take a long time before this absurd prejudice will have been overcome and before we can establish a feeling of mutual respect and friendship from which alone we can form a united profession.

The few points we will have to agree upon are a higher standard of preliminary education of students, a higher qualification of instructors, a uniformly graded course of instruction and a uniform degree. In endeavoring to do so we are compelled from the start to exclude the "two year" schools. Their course presents an anomaly which cannot be assimilated. This proceed-

ing will simplify the negotiations between the remaining colleges and makes a result tangible, and may lead to an association of three-year colleges.

It is now conceded by everybody that for the study of veterinary medicine in its present state of rapid advancement, the common education demanded by our colleges is ridiculously low. In fact it can hardly be conceived how a young man with such limited training can adapt his crude intellect for the study of any science at all. The trouble is that older and more developed professions than ours, for instance the medical profession, do not as a rule demand a higher school education from their students. Whatever advancement we wish to make will, therefore, have to be made gradually. A good english education is, of course, essential, but I believe the time has come when we should announce in the catalogues of our veterinary colleges that a limited knowledge of Latin (Grammar and Cæsar's *Bellum Gallicum*) is desirable, and that we should also encourage the knowledge of a little Greek (Reading of Xenophon's *Anabasis*). While we may not be able to make such knowledge obligatory from the start, it will tend to introduce its value to intending students. And if it is thus announced by all three-year schools it will harm no individual college. The study of German and French is also a great help to students, although in my opinion it will never equal the benefit derived from the mental training of these classic languages from which, besides we derive our whole medical terminology. For any further or sharply defined demand neither the profession nor the country is ripe; but that it is too much to-day is a mistake when we consider that France and Germany ask from their students a pre-education equal if not superior to the degree of M. S. or M. A. of our American Universities. Thus we can see how far back we are and will be for generations to come.

Prof. Liautard is right in severely criticising the mode of recruiting the faculties of our veterinary schools. But not only should the professor be a specialist in his particular branch, he ought to be also a model man as regards character and habits,

in short a professional gentleman. While this may be a delicate point for discussion it is one of great importance; for the appreciation and respectability of the profession does not merely rest upon the scientific attainments of a man, but perhaps more so upon his indisputable habits and tact. This phase of the question has been sadly neglected in forming veterinary faculties, as I have often heard disrespectful remarks by graduates about the habits of their teachers, a matter which is highly to be regretted as being possible at all.

Another point which needs criticizing is the more and more apparent policy of our American Schools to prefer their own graduates as teachers and professors. The cause of this policy is easily understood from the fact that the good qualities and talents of a man are easily recognized while he is a student at college. To a certain extent, therefore, this custom is natural and excusable, but if carried as far as it has been of late it creates "cliques" and "professional rings," which are liable to overestimate their ability and influence, and which must in time become a menace to the college.

If all the young and inexperienced V. M. D's. and M. D. V's. and D. V. S's., whose names constitute for the most part the faculties of our colleges, would exchange their places between Boston, New York, Philadelphia, Montreal, etc., the faculties so diversified would certainly receive a new impulse and take a vigorous development.

The course of instruction in our colleges as regards subjects is not so much inefficient as it is unsystematical. It seems as if the needs of the students are not fully grasped. Subjects which justly belong to the third year are crowded into the second or even the first year's course. The attempt to teach clinical medicine together or even before the purely theoretical branches are thoroughly mastered, is folly. It confounds the student and makes teaching difficult. The subjects should be arranged in their natural order. The first year should be wholly devoted to the introductory branches, the second year should finish the theoretical branches, and the third year should teach the student

the clinical aspect of rhedicine. Not before such a system is adopted can we look for a uniform standard of education.

Now a word about our American degrees. I suppose that we all feel that this matter has assumed a ridiculous shape. Think of a hack-driver that goes through a two-winter college course and then comes out a Doctor of Veterinary Science, a Doctor of Comparative Medicine, a Doctor of Veterinary Medicine or what else. Would it not be more humane toward such poor fellows to confer to them the degree of "H. D." Horse-Doctor? Their burden would certainly be easier. As things now stand we had better return to the V. S. which is good enough for any one, and leave all these preposterous degrees of Doctor to the disreputable colleges. I personally could never see the need nor the propriety of affixing the "Doctor" to our professional title. The intrinsic value of this degree is very low in this country. Learned Europe does not meddle with "Doctor" degrees and there is no M. D. or V. M. D. conferred upon students who pass the graduation examination. The simple title of "Medecin" and "Arzt," "Medecin Veterinaire" and "Thierarzt," is appreciated in France and Germany by all as designating men of higher education. If anybody there aspires to a Doctor degree he must go through special examinations, write dissertations, etc., etc., which is a costly undertaking and is sought for by few.

It is true that America is the home of the D. D., LL.D., and M. D., and a V. M. D. is a natural sequence. But from reasons mentioned above let us hope that a worthy degree may be found which could be adopted by our three-year schools. Let us hope this for the good of the profession at home and for its better appreciation abroad.

MY EXPERIENCE WITH TUBERCULIN IN A SMALL HERD OF CATTLE.

BY C. E. CLAYTON, D.V.S.,

Late House Surgeon, American Veterinary College Hospital.

A local veterinarian was called to examine a horse on a farm in one of the adjacent towns, and while there was asked to look

at two cows that were not giving the amount of milk they should and were also coughing. Upon examination he suspected tuberculosis and called Dr. Liautard into consultation, who pronounced them both to be suffering with the disease. They were sent to the college to be destroyed but before doing so, it was decided to inject tuberculin that the students might watch the results as well as examine them, and also see the pathological changes occurring from this disease.

Cows No. 1 and 2 were admitted to the hospital January 3d, and the temperature taken three times the following day and on the 5th of January received an injection of $2\frac{1}{2}$ c.c. at 8 o'clock A. M.

COW No. 1.		COW No. 2.	
Before Injection.	After Injection.	Before Injection.	After Injection.
8 A. M. 101 4-5	101 2-5	102 4-5	100 3-5
10 "	101 2-5		100 4-5
12 M. 102	100 4-5	101 1-5	101
2 P. M.	101 2-5		101 2-5
4 "	101 1-5		101 2-5
6 "	101 1-5		101 2-5
8 " 101 4-5	104	101	103
10 "	105 1-5		105 4-5
1 A. M.	106 1-5		106 2-5
6 "	103 3-5		102 3-5
8 "	102 3-5		102 2-5
12 M.	102		102 2-5
6 P. M.	102 3-5		102 1-5

Post-mortem No. 1. Left lung with large tubercular deposits, tracheal glands very large and filled with calcareous deposits and also a few nodules on the liver.

Post-mortem No 2. Thyroid gland very large and tubercular, small nodules on right lung and large lesions of mammary gland.

The owner saw these post mortems and wished to have the rest of the cows examined, so on the 8th of January I went to the farm, arriving at 6:45 P. M., took the temperature then and at 10 P. M., at which time they were injected, the same quantity being used as in the other two.

COW No. 3.		COW No. 4.
January 8th, 7 P. M.	103 3-5	101
10 "	103 Injected at this time.	101 1-5 Injected.
January 9th, 7 A. M.	102 1-5	101 1-5
9 "	102 2-5	101 3-5
11 "	102 4-5	102 3-5
1 P. M.	102 3-5	105 2-5
3 "	102 4-5	104 4-5

Cow No. 3 giving no reaction, was not destroyed.

Post-mortem of cow No. 4 showed tubercular deposit on right lung about the size of a silver dollar and tracheal glands slightly affected.

COW No. 5, 1 year old.		COW No. 6.
1 P. M.	101 2-5	101 4-5
10 "	101 Injected at this time.	101 2-5
7 A. M.	101 1-5	102
9 "	101 3-5	105
11 "	101 4-5	106 2-5
1 P. M.	101 4-5	106 2-5
3 "	101 2-5	102 4-5

No. 5 not destroyed.

Post-mortem of Cow No. 6. Small tubercular deposits were found in left lung and also in mammary gland and right ovary.

COW No. 7.	
January 8th, 7 P. M.	101 1-5
10 "	101 1-5 Injected at this time.
January 9th, 7 A. M.	101 4-5
9 "	102
11 "	103 1-5
1 P. M.	105 1-5
3 "	103 3-5

Post-mortem of Cow No. 7. Only one tubercular nodule could be found and this was deeply seated in right lung.

Nos. 4 and 5 will be tried again in the future.

The conclusions to be drawn from these cases are, that tuberculin is a most delicate test, as the lesions in Nos. 4, 6 and 7 were so slight that it was impossible to detect their presence by physical examination.

GLYCOSURIA PRODUCED EXPERIMENTALLY IN ANIMALS
BY PHYSICAL EXCITATIONS.*

BY PAUL GIBIER, M.D., Director of the New York Pasteur Institute.

Physiologists have produced hyperglycæmia, glycosuria, and even fatal diabetes mellitus, by various processes, such as irritation of the floor of the fourth ventricle (Cl. Bernard), of different portions of the brain, spinal cord, spinal and sympathetic nerves, (Schiff, Pavy, Aladoff and Cyon, Eckhard, Klebs and Munck, Filehne, Vulpian, &c.), intoxication or poisoning by means of substances too numerous to enumerate, but foremost among which phloridizine may be mentioned (Von Mering), traumatism of the skull, and excision of the pancreas (Von Mering and Minkowski, Lépine and Hédon, A. Chauveau and Kauffman).

Glycosuria may also appear spontaneously in animals and cause death, but in such cases the etiology of the disease appears to be, if possible, still more obscure than it is in man. In the latter, it is admitted that glycosuria may appear under the influence of numerous causes; as in lesions of the nervous system, the liver and the pancreas; traumatism, intoxications, or poisoning, and disorder of nutrition. Without discussing the opinions of theorists on diabetes, who have proposed many classifications of this disease, one that it is generally admitted that glucose may be directed in the urine of man after certain mental disturbances, as, for instance, on the eve of a dreaded surgical operation, after great worry, the loss of a fortune by ruined financiers, whose hygienic state is generally favorable to the disease. In short, the influence of any violent moral commotion, of variable duration, predisposes the victims to this affection, and without appreciable prodromata, glycosuria takes root and often completes the destruction inaugurated by anxiety.

If analogous instances have been observed in animals, I have been unable to find any reports in the literature of the subject.

*Read before the Biological Section of the N. Y. Academy of Sciences, April 9, 1894.

For this reason, I consider the following observation, which I made in the course of researches on diabetes mellitus, as sufficiently interesting to lay it before the Academy.

Experiment.—A female dog, aged about 4 years, was placed under observation while at liberty with the other dogs utilized in the laboratory of the Institute. Its urine, tested repeatedly for sugar, for several successive days, gave no reaction with the cupro-potassic, or Fehling's fluid, and when decolorized and examined, with the polariscope there was no deviation of light. When this dog, which is of an affectionate, timid and jealous nature, is placed in its cage alone, it whines continually, and when it sees the other dogs enjoying liberty, its cries become unbearable.

When the dog was shut up on the first occasion its urine gave no reaction for three days, but on the evening of the fourth day, it contained 5.55 per 1.000 of Glucose as demonstrated by Fehling's fluid and the polariscope. The Glycosuria persisted as long as the captivity, but, on the day after the dog was set free, the sugar disappeared.

The same experiment was repeated six times on this dog with the same results, viz., that, after four, three and even two days of incarceration, glycosuria appeared, while it disappeared (after one, two or three days) when the prisoner was allowed to enjoy liberty and the company of the other dogs. The quantity of glucose was 6.66 in one of the experiments, 8.88 in another, and in a third it was 25 per thousand, a very high ratio compared with that observed generally in animals affected with diabetes.

Glycosuria did not occur when the animal was shut in with a companion. No comparison was made with regard to the quantity of urine, drink and food.

The experiment tried with another female dog of seemingly apathetic nature, gave negative results.

This fact demonstrates that some animals, like man, are susceptible of being affected with glycosuria under the influence of physical excitation. To my mind the deduction which may be drawn from this fact is that the experimenters who attempt to

produce diabetes mellitus in animals by operations should take the emotional factor into consideration, and to remember that vivisection may sometimes affect the animal as much in its psychical entity, as in its material body.

Again, enlightened by this observation, we may be able to ascribe some cases of apparently spontaneous diabetes in the dog, ape, horse, etc., to the influence of various psychical causes, as change of condition or residence, the loss of a dear companion or beloved master, captivity, etc.

Certain philosophical considerations may also be deduced from the existence of this common link between the inferior order of emotions of man, and those of the lower animals, but those interested in moral or intellectual problems need not be solicited to reflect upon this aspect of the subject.

HOMOEOPATHY APPLIED TO VETERINARY MEDICINE.

BY F. B. CARLETON, M.D.V.

A paper read before the Massachusetts Veterinary Association.

MR. PRESIDENT AND GENTLEMEN:—When I received a note from our secretary, reminding me that a paper was expected from me to-night, I had forgotten that twelve months ago I had promised one, consequently I had made no attempt at preparing. So, on the plea of lack of time, and the fact that the subject was not of my own choosing, but suggested by Dr. Peters, I ask you to excuse my short-comings, and perhaps you may get an idea or two from what I am to read, the subject having at least the recommendation of novelty.

As some of you are aware, about fifteen months ago I gave up my veterinary practice in order to study human medicine, and desiring some knowledge of homœopathy, I entered the Boston University School of Medicine as a candidate for the degree of M.D. What little I have to say will be largely taken from the work of others, my own experience necessarily having been rather limited.

At first let me give briefly the history of homœopathy, and the principle which underlies the application of medicines under the law of *similia similibus curantur*.

The founder of the school was Samuel Hahnemann, a German physician, who, late in the eighteenth century, while experimenting with cinchona bark, discovered its power to produce certain symptoms similar to those existing in diseases for whose cure it was administered. The idea that he had discovered a universal law flashed upon him, and he proceeded to "prove" various other substances, and to bring into prominence medicine whose therapeutic virtues had not previously been known.

As you are doubtless aware, "proving" substance consists in administering to a number of healthy persons some substance the nature of which is to them unknown, and noting the effect produced. It is customary to give one or more of the provers some innocuous substance, in order that symptoms due to the imagination may be eliminated.

Under the law of similars, the remedy would be useful in the cure of a disease the symptoms of which resemble those produced in the provers.

Remember now that homœopathy does not necessarily imply infinitesimal doses, although a good many of that school do believe that they can effect cures with quantities of drugs so small that our imagination cannot reach them. Be that as it may, the homœopathic idea is not large dose of a remedy, nor small dose, but the right remedy.

And now we come to a brief discussion of a number of remedies. Colocynth, the bitter cucumber, as many of you will testify, has in its proving the following symptoms: Intermittent, colicky and increasing spasmodic pains, accompanied by a cold sweat, and relieved by hard pressure, very severe while the paroxysms last, but the intermissions are free from pain. Colocynth will almost immediately relieve a case with the above symptoms, as I have demonstrated to my own satisfaction in several cases of spasmodic colic. The pain should be purely a

neuralgic one, and not due to any organic lesion in order to have colocynth of avail.

Aloes, with which you are all familiar as a cathartic, is also useful in cases of diarrhœa not produced by the drug. A case of scouring in which there is some rumbling of the bowels, pain before passage of fæces, which escape without effort and accompanied by a good deal of flatus, and more or less straining when the rectum is empty,—such a case would probably yield to aloes. I can personally recommend aloes in hæmorrhoids both in man and beast. It will be found useful in various inflammations of the large intestines and especially in congestive diseases of the anus and rectum.

Nux vomica, which in its provings was found to produce constipation, gastralgia and dyspepsia as a few of its symptoms, is an exceedingly important member in the homœopathic materia medica. Unfortunately for us, it acts more powerfully on the carnivora than on the herbivorous animals; still it is by no means without value in veterinary practice. It is of use in colic from over-eating, accompanied by constipation and frequent, ineffectual attempts to pass manure. It is of value in dogs who are over-fed, constipated and have insufficient exercise, but remember that no inflammation of the mucous surface should exist if it is desired to use nux.

This is one of the many remedies that is used homœopathically by the old school, who prescribe it, or its alkaloid strychnia, in small doses in sick-headache or migraine cardialgia and gastralgia.

In my own experience it has seemed indicated in the following: In the case of torpidity in the bowel of a horse; 2, in a so-called fitty horse, whose trouble appeared to me to be caused by indigestion; 3, and 4, in two cases of gastric disturbance in dogs, both accompanied by constipation, fever and want of appetite, and one of which was rather severe.

In all of the above the treatment was eminently successful, the administration of the nux vomica being followed by recovery, and that rather soon. Of course the animals might

have recovered anyhow, but that is something one might say about any case and whatever the treatment, excepting, of course, in surgery.

Belladonna is well known to you. That, again, is a drug which doubtless you all have used homœopathically. Take one instance only, that of pharyngitis. Belladonna has in its proving the same inflamed, dry, sore-throat for which we are in the habit of prescribing it. In conjunctivitis and various other inflammations of the eye it is widely used.

Its sphere is almost unlimited, and it would be useless for me to do more than mention it. In one case of a horse subject to fits, as the owner said, I used it for two weeks, reducing the number of attacks from one or more daily to one during the fortnight. Unfortunately, I left the place then, and am unable to state whether a permanent cure resulted.

In the *Medical Advance* for October, 1893, are reported a number of cases from which I shall quote, in all of which the treatment was successful.

Rhus toxicodendron, the sumach or poison oak, was used in case of a horse lame forward. *Conium*, or hemlock, was used in several cases of azoturia. As far as I can find out, *conium* is homœopathic to the paralysis of the disease. As azoturia may, and often does result fatally, it strikes me that *conium* is well worth a trial.

Pneumonia with phosphorus for a remedy, glonoin or nitroglycerin was given to a horse with blind staggers.

Kali carb., carbonate of potash in leucorrhœa in bitch with general inflammation of the genitalia.

Arsenic in diarrhœa in an ox and in chicken cholera.

What I have said will be a nucleus on which to build to those of you who are at all interested in the subject. Remember that I have merely touched on a very few of the drugs which are in daily use by homœopathists. My knowledge of the subject is very limited, but the more time I give to it the more I am convinced that on the whole it is the most rational system of medicine known at the present day. I can only say, don't

condemn it until you have given it careful study and trial. I was, a few years ago, as sceptical in regard to homœopathy as any of you, but reflection, study and actual practice have convinced me that curable diseases can be cured more easily and quickly by a rational homœopathy than by any other known method. And if this be true of men, why not apply the principle to veterinary practice?

PURPURA HAEMORRHAGICA—ŒDEMA, ANASARCA, ETC.

BY H. E. SPENCER, D.V.S., San Jose, Cal.

A paper read before the California Veterinary Medical Association.

In response to the chair, I have prepared a paper on the above subject, not with the idea that I could enlighten you gentlemen on this disease, but with the hope that something would be learned by the exchange of ideas that the discussion of this paper would bring forth.

I have been singularly fortunate in the treatment of this disease, having not lost a case of it in two years, save one that was taken out of my charge on the second day and given over to the tender mercies of the groom. And I have treated a great many, as our locality seems to be a hot-bed for influenza, catarrhal fever, pyogenic fever, or, as it is commonly called, distemper.

Purpura hæmorrhagica is due to a paralysis of the vaso-motor nerves which govern the circulation in the smaller blood-vessels and capillaries, and also to an altered condition of the blood, the red blood corpuscles being smaller and shriveled in appearance, as though treated to the action of ammonia; the white blood corpuscles are increased in number, and there is an excess of the aqueous portion, causing the coagulability of the blood to be greatly lessened.

Purpura usually follows some debilitating disease, as influenza, but has been known when it was due to unsanitary surroundings and poor provender. It usually follows a slight attack of catarrhal fever when the horse has made a rapid recovery, the exciting cause being usually exposure to cold,

generally exposure to cold draughts of air on a heated but not necessarily sweaty body, exposure to rain being more liable to cause pneumonia, pleurisy, etc.

Semiology.—The symptoms of this disease are quite variable, but upon examination of the tongue you will notice a purple or claret color, later petechia will appear on the Schneiderian membrane, and often in the mouth along the lingual gutter, and on the frænum; then swellings appear around the nostrils, on the neck, belly and legs. These tumors are peculiar to this disease; they are about the size of a hen's egg, well defined, the edges being very abrupt, pitting slightly on pressure, and are but slightly sensitive to the touch. They usually disappear and come again in twelve hours, but do not always appear in the same location as before, growing rapidly larger and coalescing until the legs are twice their normal size, the belly swollen from two to four inches, the line of swelling very abrupt as though a ligature had been fastened around, and the animal becomes very stiff and sore from the swelling around the joints. The head sometimes swells to an enormous size, especially about the inferior maxillary, making the animal resemble a hippopotamus more than a horse, and inconveniencing him greatly when feeding. The effusion around the glottis and nostrils sometimes renders breathing difficult. Thus far the temperature is but slightly elevated, if at all, the pulse normal, or perhaps only a little weaker; respiration is not altered if the œdema does not diminish the caliber of the nostrils or the glottis. The appetite is usually good and the animal seems to be in good spirits, but does not move much on account of the swellings around the articulations. After three or four days there appears a serous exudate of the skin over the œdematous parts that loosens the epidermis, which dries up and cracks; if this exudate is very extensive there will be ulcerated spots on the skin, the petechia on the Schneiderian membrane acting as an irritant and producing catarrhal discharge. There may or may not be swelling of the lymphatic glands from absorption of the exudate. The temperature now may be slightly elevated, the pulse and respir-

ations accelerated, the appetite usually good, or may be precarious. The rise in the temperature, when it occurs, is caused by septic poisoning, and at this stage there may be sloughing of the skin from the great pressure on it, or from poor circulation through it, or gangrene may occur from the same cause. In this case it leaves a large ulcerous sore. Metastasis often occurs; the swelling which has been in the legs and belly suddenly leaves and appears in the head, causing great dyspnœa, and it would seem as though tracheotomy would be necessary, but the animal will almost always die from septicæmia if tracheotomy is performed; or the swelling may disappear and produce intestinal œdema, which is manifested by great abdominal pain, and usually produces death, or it may terminate in an exhaustive diarrhœa, which is hæmorrhagic in nature; or it may produce pulmonary œdema, in which case there would be marked dyspnœa without swelling of the head; this would indicate metastasis into the parenchyma of the lung, showing a dullness on percussion and râles by auscultation. This usually produces death by asphyxia or asthenia. Septicæmia is very often the cause of death, especially if there be any sores or wounds on the animal, the symptoms being those of septicæmia (rise in temperature, rigors, hurried breathing, fast, weak, wiry pulse, etc).

The prognosis must always be guarded, as an apparently benign case at first may prove fatal in a very short time while a very severe case may terminate by resolution in a few days.

Treatment.—Medicines must be used to alter the blood,—to produce fibrin factors and more red blood corpuscles, and reduce the watery portions. My line of treatment is usually potassium chloride in half-ounce doses to produce fibrin factors and reduce the watery portions, iron to stimulate the production of red blood corpuscles, ergot to regulate or give tone to the blood-vessels, and quinine as a tonic. I also use showers of cold water on the œdematous parts to produce a shock to the vaso-motor system controlling the blood-vessels.

A BACTERIOLOGICAL STUDY OF EQUINE FISTULAE.

By C. M. DAY.

A paper read before the Iowa State Veterinary Medical Association.

Since the general acceptance of the doctrine that the presence of certain parasitic microbes is an essential feature of the suppurative process we can no longer be satisfied to refer Poll-evil and fistulous withers to traumatism only, but must in this, as in every other instance, apply the methods of bacteriological analysis. These conditions are peculiar to the equine species, and from their seriousness, frequency and intractability are of great practical importance. This study has been made to the extent of identification of the species and virulence of some micro-organisms found in the pathological elements from the cases mentioned.

The part of the animal economy generally known as the poll is the region immediately behind the ears, on the superior part of the neck. The skin very thick on the median line, thinner on the sides, with a thick layer of connective tissue, more or less infiltrated with fat, just beneath; the cord of the ligamentum nuchæ, which is attached to the occipital bone and more or less covered with the cervico auricularis muscle on each side, and on the same level the terminal insertion of the splenius muscles, forming an elevation which is covered with the aponeurosis common to that muscle, and the small complexus which makes an apparatus of retention of great resistance to the organs of the region; another layer, composed of the large tendon of the great complexus, the small oblique muscle of the head, the great oblique, and under them the posterior great muscles of the head, a serous sac, assisting the gliding of the cord of the ligamentum nuchæ over the atlas, and finally a skeleton of the region, atlas, axis, occipital crest and the occipito-atloid and the atlo-axoid articulations. These are the principal anatomical features of this region.

The withers is the part of an animal just posterior to the cervical region. It is formed by the superior spinous processes

of the dorsal vertebræ and the muscles which cover them. The skin lined inside with cellular tissue, more condensed toward the median line than on the sides, where it is loose, the trapezius muscle thick and muscular in its upper portion, where it lies over the external surface of the scapula, and its cartilage of prolongation, thin and aponeurotic inferiorly; the rhomboideus muscle, which is separated from the second plane on its external surface by a layer of loose cellular tissue, and is lined on its external face with a yellow elastic band inserted on the inner face of the cartilage of prolongation of the scapula (this band is especially liable to attacks of necrosis); the superior portion of the anterior small serratus muscle, which is formed by a broad aponeurosis attached to the superior extremity of the spinous processes of the vertebræ, the anterior portion of the ilio spinalis muscle; the deepest of these planes resting on the faces of the long spinous processes of the vertebræ is formed by the transverse spinal muscles of the back.

The Poll-evil is a fistulous ulcer, situated on the supero-posterior portion of the head, immediately behind the ears. At first it may be recognized as a soft, fluctuating tumor, surrounded by an inflammatory swelling, with enlargement of the superior cervical lymphatics and the superficial veins of the neck.

The tumor that can be felt may be a cyst filled with serum, or it may be filled with a purulent substance, just as the case may happen to remain aseptic, or become infected with micro-organisms; if a serous cyst is formed it may become infected during formation by micro-organisms entering the serum which forms or makes up the cyst.

Fistulous withers resembles Poll-evil in every particular except its location.

If we get the anatomy clearly in our minds, we will have a good idea of the intricate disposition of its many parts, with their relation to the disease which attacks them, and it also explains the tendency of the purulent material gravitating and collecting between the muscles, and contributing to the formation of the ailment known as a true "diseased withers," with

the habitual severity with which it is characterized. Thus there may be a pre-disposition to disease of the poll and withers by a defective anatomical conformation of the regions.

The Poll and withers are portions of the animal which are considered by a great many to be a location most exposed to injury, and for this reason alone we are prone to believe in the old theory of traumatism as the cause of Poll-evil and fistula.

We find it quite plausible, and believe that injury to the parts is the factor in the location of the disease in a great many cases.

The history of a great many cases shows that the parts have been injured at some previous time, after which the owner or groom of the animal noticed the development of an abscess. But how shall we account for the large number of cases of which we have no history nor evidence of previous injury?

On looking over the entire anatomy of the animal, we find other regions equally exposed to injury, the hip or external angle of the ilium, for instance, is more especially liable to injury, the animal frequently striking it against the barn-door in passing out and in the barn, or against the partition when confined in a narrow stall, especially when lying down; neither can the animal roll without bringing the parts violently in contact with the ground; but it is seldom, indeed, if ever we see a fistula on that region. The backband of the harness, which has been so invariably blamed for chafing and irritating the withers sufficiently to cause disease, sits day after day on muscles of the back without causing injury; the top of the neck and shoulders are pressed upon and irritated daily, maybe, with some ill-fitting collar or neck-gear, yet we seldom, if ever, see a fistula occurring on those parts. The animal may be bruised severely in many ways on various parts of the body, yet we seldom see fistulous tracts arising from the injury.

Why is it, then, we so frequently see this serious condition occurring on the poll and withers? Can we believe it always to be due to an injury when other parts of the animal daily receive equally as severe injuries without producing these results? Or

can we, by considering the complex anatomy of these parts, and, with our knowledge of bacteriology, conceive its being the work of micro-organisms in those parts? Hertwig said, "Poll-evil may occur without any local injury." For this and many other reasons the researches of science are aroused to study the etiology of Poll-evil and fistula from a bacteriological standpoint, with a view of connecting the disease with bacteria and placing it in the category of bacterial diseases.

The old theory of traumatism, we think, has become too vague and unsatisfactory to satisfy the scientific mind and keep pace with the rapid advancement in all other branches of veterinary medical science.

Science has discovered and proved beyond a doubt in the last few years that bacteria play a most active part in the etiology of a great many diseases, just as there have been wonderful discoveries in the last few years in regard to the causes of disease, so there will be still more advancement in that direction. Therefore, the scientific workers of the present time should feel it their duty, and work as hard to reveal the mysteries which surround some of the ills which man and animals are heir to.

In the study of bacteriology we find pathogenic organisms getting into the animal system in several ways, and causing severe and dangerous trouble—causing abscesses in various parts of the animal, also giving rise to diseases known as pyæmia and septicæmia.

Pathogenic organisms are divided into two distinct classes—specific and non-specific.

The specific are always followed by the same disorder under whatever circumstances they occur.

The non-specific ones, according to modes of infection and the condition of the tissues, give rise to a variety of diseases—suppuration with its sometime consequences, pyæmia and septicæmia. It is an open question whether suppuration can occur from merely mechanical or chemical irritants, however persistently they act. Ogston was the first to show as a matter of

fact that certain forms of organisms are invariably present, staphylococci and streptococci, in acute abscesses, whatever share they take in their causation. They enter either through a wound, mucous membrane or skin, and travel by means of the lymphatics or blood-vessels.

Staphylococci lead to circumscribed abscesses; streptococci spread by the lymphatics and are followed by diffuse suppuration. Suppuration cannot occur without pyogenic organisms just as tubercle cannot occur without its specific bacillus.

When nutrition of the tissues is impaired by prolonged residence in foul air, or during convalescence from exhaustive disease, suppuration occurs without local injury; the capillaries may become plugged with micro-organisms at some point, and the walls of the vessels are then the first to perish and melt away. Aided by the hyperæmic condition of the parts, the germs remain sufficiently powerful to continue the destruction in the direction of least resistance.

If these germs are slow in their action or do not invade a very extensive area, nature tries to protect the system against the invading organisms and their ptomaines by throwing a sheet of tough fibrous tissue around the pus formed to prevent the organisms and their products from entering the general system and causing general infection. But, when the streptococci pyogenicus gains early access to the lymphatic spaces and spreads through them before the tissues can resist, a resisting membrane is never formed and suppuration is diffuse; the tissues are so reduced in strength they disappear before the invading germs, unable to protect themselves with a barrier of any kind.

Diffuse suppuration is only met with when the action of the germs are very intense, or the resisting power of the tissues is exceedingly feeble and is associated with both streptococci and staphylococci. Sometimes, owing to the presence of dense sheets of fascia, the pus spreads laterally for a distance among the tissues, but sooner or later its course turns towards the surface, the skin, or mucous membrane, as the case may be, gives way and the abscess breaks and discharges its contents.

The extent of the changes in the tissue depends on the condition of the tissue and the virulence of the pus-organism. The tissues, in their endeavor to limit the action of the irritant, always produce the same exudation, but the change this undergoes under the influence of different irritants, and under different conditions, naturally differs and gives rise to different diseases. Suppuration is a complication due to the action of certain micro-organisms. Most of the pathogenic bacteria under ordinary circumstances do not reproduce themselves outside the body, but their resistance to heat and cold, moisture and dryness, is so great that they retain their disease-producing qualities often for an indefinite period of time, and after their entrance into the body, meeting with a proper nutrient medium, they exert their specific pathogenic effects.

We have now taken into account the complex anatomy of the parts, the large congregated mass of muscular and cellular tissue with broad tough sheets of fascia lying between, making the most favorable place for the action of the microbes and the formation of pus. We have also studied the action and effect of the micro-organisms on the tissue.

We may now consider the susceptibility of the parts to the action of the pus-organisms; also the action of the organisms on those parts.

The respective location of these parts on the animal makes the blood circulate slowly, therefore making the capillaries and small blood-vessels very liable to become plugged with the organisms, causing stasis and the result usually following it.

The large amount of loose cellular tissue in these parts also makes them more susceptible to the action of the organisms. The action or result of the organisms are to set up a point of irritation, causing inflammation and breaking down of the tissues into pus cells by the ptomaines which they produce.

September 1, 1893. Case No. 1.—The animal was six years old and had been used for general work. It presented a considerable swelling on the right side, extending far back on the withers. The case had no history of injury to the parts, but

withers had been affected one year before and had been operated on at two previous occasions; first, on the left side at a time unknown, and on the right side about the 1st of July, when it discharged serum. The wounds from both operations, however, had entirely healed, and withers again presented their normal appearance until about one week previous to making cultures when they commenced to swell again. After washing the surface with a solution of chloral and soda a sterilized trocar was inserted about twelve inches posterior to the previous opening on right side, and a considerable amount of serum drawn off. Some of the serum was collected in a Sternberg glass bulb and in sterilized test tubes plugged with cotton, and saved for future use in the laboratory. Stab cultures were also made on agar-agar, gelatin, blood serum and bouillon directly from serum escaping from trocar. After seven or eight days the tubes were examined but no growths appeared. The conclusions are the case was a serous cyst perfectly free from micro-organisms of any kind.

September 1, 1893.—Case No. 2 was a sorrel pony, eight years old, without history of previous violence or injury being inflicted. The pony first showed lameness in left fore-limb about the 1st of June, 1893. After a short time a swelling appeared on left side of withers, which grew to be quite large, very tender and sensitive to the touch. On August 29, 1893, the abscess opened without surgical interference and discharged considerable yellow, thick, creamy pus. Cultures were made on September 1, 1893, on gelatin, agar-agar and blood serum. A very vigorous growth appeared on the agar-agar and gelatin tubes, blood serum being sterile. Examination with a microscope showed the growth to be pure culture of *bacillus pyogenes foetidus*.

September 29, 1893. Experiment No. 1.—Inoculated a mouse at root of tail; mouse died in twenty-four hours. An autopsy was held, but no pus was formed at seat of inoculation. Cultures were made from liver and heart blood, and some germ obtained that was used for the inoculation.

October 4, 1893. Experiment No. 3.—Injected 2 drachms of bouillon cultures, thirty-six days old, into the muscles on the neck, just anterior to the cervical angle of the scapular, of a horse bought for dissection. October 19th considerable swelling around point of inoculation, very tender and sensitive to the touch; swelling remained large and sensitive until October 25th, when the animal was destroyed and the parts dissected out. I found a cavity filled with a light-colored serous substance which, on examination with microscope, was found to contain pus corpuscles; it was evident that some of the tissue had broken down and a true abscess had formed. Cultures were made directly from the newly-formed abscess on agar-agar and potato; the growth which resulted was same as original.

September 2, 1893.—Case No. 3 was a horse eight years old which had Poll-evil. The abscess had been lanced six days previous to making cultures, and was discharging a thick, yellow, creamy-like, odorless pus. The history of the case could not be obtained. Cultures were made on agar-agar, gelatin and blood serum. A vigorous growth appeared on agar-agar tubes. On examination with the microscope, found it was a bacillus, but failed to identify it further.

November 10, 1893. Experiment No. 1.—A mouse was inoculated with some of the original cultures; an abscess formed in thirteen days about middle of tail; no pus at seat of inoculation. November 17th made cultures from abscess on agar-agar, gelatin, potato and bouillon, and had no trouble in obtaining the same characteristic growth as the original.

September 2, 1893.—Case No. 4 was a bay mare, six years old, with a fistula on right side of the withers. The early history of the case could not be obtained. The abscess had been lanced seven days previous to our observation, and was discharging a thick, yellow, creamy-like odorless pus. Stab cultures were made on gelatin, agar-agar and blood serum.

After remaining several days in the laboratory at the room-temperature a vigorous growth appeared in the agar-agar tubes, the gelatin and blood serum tubes being sterile. November

20, 1893, a mouse was inoculated with some of the growth on agar-agar; mouse died in about thirty-six hours; cultures were made from heart, blood and liver, and same germ obtained as in original.

September 2, 1893. Case No. 5.—Fistula in a bay colt three years old which had never worked; no history of previous injury of the parts. The abscess made its appearance about three months before inoculations were made, withers swelled a great deal; abscess broke on right side, discharged pus and swelling went down on this side but remained large on the left side. After closely clipping the hair over the swelling on the left side, and washing surface with a solution of bichloride of mercury 1 to 500, the abscess was lanced and a small amount of serum and pus escaped. Some of this was collected in a Sternberg bulb, and saved for future use in the laboratory; cultures were made on agar-agar, blood serum and gelatin directly from abscess; and Esmarch rolled tubes were made in the laboratory from contents of bulb, but no growth appeared in them. The stab cultures on agar-agar and on blood serum were also sterile, but a slight growth appeared in the gelatin tube, and some transfer cultures were made from it. On examination of the germ with a microscope, and after growing it on several media, it was found to be the *staphylococcus pyogenus citrius*. The germ was pathogenic as the following experiment shows. October 26, 1893, inoculated a mouse at root of tail with growth on potato; mouse died in about eighteen hours; no pus formed at the seat of inoculation. Post-mortem was held, and stab cultures made from liver and heart blood which developed same organism.

Case No. 6 was a colt three years old, which had never been worked. Presented a considerable swelling on both sides of withers without any history of injury. The swelling on the left side had been blistered with a blistering ointment. After clipping the hair and washing the surface with a solution of corrosive sublimate, about 1 to 500, the swelling on the left side was lanced. From the pus and blood which escaped stab cultures

were made on agar-agar, gelatin and blood serum. Some of the escaping pus and blood was collected in a Sternberg glass bulb and saved for making cultures in the laboratory. After remaining for six days in the laboratory at the room-temperature, very vigorous growths appeared on agar-agar; on examination this growth was found to consist of the *sarcina lutea* and the *staphylococcus pyogeneus aureus*. Experiments were made on a horse and several mice to determine their virulence, and both germs were found to be pathogenic as the following experiment will show.

September 12, 1893. Experiment No. 1.—Injected 1 drachm of bouillon culture four days old of the *sarcina lutea* into the muscles of the neck of a horse, bought for dissection, a few inches anterior to the cervical angle of the scapula. The case was daily examined but no abscess was found, no signs of irritation.

September 26, 1893. Experiment No. 2.—Injected about 2 drachms of bouillon culture eighteen days old into the muscles of the neck of another horse, in about the same location as the previous case, but was again unable to produce an abscess.

September 14, 1893. Experiment No. 3.—Mouse inoculated at root of tail with some of the growth on agar-agar (*sarcina lutea*); mouse died in about twenty-four hours; cultures made from liver and heart blood developed the same characteristic growth. No abscess was formed at seat of inoculation nor in any part of the body that could be detected on dissection.

September 29, 1893. Experiment No. 4.—Mouse No. 2 was inoculated at root of tail with the *staphylococcus pyogeneus citreus* grown on agar-agar; mouse died in about twenty-four hours; autopsy was held but found no pus, and no abscess was formed at seat of inoculation. Made cultures from liver and heart blood on agar-agar, and obtained some characteristic growth as original.

October 4, 1893. Experiment No. 5.—Growth from liver of mouse No. 2 was inoculated into mouse No. 3 at root of tail. The mouse did not die, but an abscess was formed at seat of

inoculation in about six weeks. On October 17, 1893, a large scab was lifted and cultures made from the pus and the same germ was obtained.

September 13, 1893.—Case No. 7 was a gray mare, six years old, brought to college hospital for treatment, with fistula on neck just anterior to shoulder. The history of the animal showed she had been affected with strangles in the spring of 1893, and several abscesses formed on the animal which broke and discharged pus, all of which healed except one on the neck, which remained open and continued to discharge pus through a fistulous opening. Cultures were made on gelatin, agar-agar and bouillon. After remaining for three days in the laboratory at room-temperature, vigorous growths appeared on all the tubes. On examination the staphylococcus pyogenus aureus in pure culture was found in all the tubes. It was quite virulent as the following experiments will show.

September 29, 1893. Experiment No. 1.—Inoculated mouse with growth from agar-agar tube; mouse died in about twenty-four hours. Autopsy was held and inoculations made from liver and heart blood, also cover glass preparations made from heart blood. Cultivations from heart blood produced same germ. In cover glass preparations the staphylococci could be seen with microscope.

October 4, 1893. Experiment No. 2.—With the growth on agar-agar from heart blood of first mouse, a second mouse was inoculated which died at end of four days. Cultivations were made from liver and heart blood and same germ cultivated. No pus at seat of inoculation.

October 6, 1893. Experiment No. 3.—Inoculated a dissecting case (horse) on the neck, just a few inches anterior to the cervical angle of the scapula, with about 6 drachms of bouillon culture twenty-four days old. On the following day, October 7th, a considerable swelling appeared, very tender to the touch. October 8th, swelling much larger and more tender and sensitive. October 9th swelling about the same; tenderness remains. October 10th swelling about the same, quite tender yet. October

11th swelling going down, not so tender to the touch. From this time the swelling gradually went down until it got the size of a tea saucer, and tenderness, gradually disappeared until October 25th when, the animal being killed for dissection, we dissected it out and found a number of small cavities filled with a thin yellowish-colored fluid, which, on microscopical examination was found to contain pus cells. Cultures were made from the abscess thus formed, and same characteristic growth was obtained; also some cover glass preparations were made which showed, on examination with the microscope, the same bacillus as original.

From the foregoing experiments the conclusions are that a great number of germs are present in a case of Poll-evil or fistula which has been opened and exposed to the air; a number also in abscesses which never have been opened, the parts having become infected from within by pus germs having sufficient virulence to cause an abscess.

Reference.—W. Williams, Surgery; Liautard, Surgery; N. Senn, Surgical Bacteriology; Sternberg, Surgical Bacteriology; Crookshank, Surgical Bacteriology.

The work of this thesis was done under the immediate supervision of Dr. W. N. Niles, Assistant Professor of Veterinary Medical Science, in his laboratory at the Iowa Agricultural College, Ames, Iowa.

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THE AGRICULTURAL ASPECT OF TUBERCULOSIS.

BY SESSIONS, Sec'y State Board Agriculture.

A paper read before the Massachusetts State Veterinary Medical Association.

It is but a few years since tuberculosis in cattle was known to the public to be prevalent. The attention of scientists, particularly of veterinarians, has lately been directed to the disease as a source of danger to the life and health of the human fam-

ily. Investigations have proved the disease to be generally prevalent among the cattle in all thickly inhabited countries although most of the cattle affected show few outward indications of the disease. In fact, a large majority of such infected animals are apparently healthy, and the presence of the disease cannot be detected with certainty without the use of tuberculin.

The danger to human life and health has been discussed and magnified until the public are demanding action, by the State authorities, for their protection. Authority has been given the Cattle Commissioners to kill, without appraisal, all cattle found to be affected with the disease.

The discovery that the injection of tuberculin is a very reliable method of detecting the disease, has led many to believe that this should be applied by the authorities to all suspected herds, and some people are of the opinion that all the cattle of the State should be subjected to this test. From the experience thus far had in the use of tuberculin, we are led to believe that a large proportion of the cattle that are apparently healthy would be condemned by this test. The present law provides no recompense to the owner of such cattle. These conditions make the agricultural aspect of tuberculosis very serious indeed.

The neat stock of the State is rapidly decreasing, the decrease having begun with the agitation of the danger from tuberculosis. In 1890 200,658 cows and 62,549 neat cattle other than cows were assessed. In 1893 85,806 cows and 47,528 neat cattle other than cows were assessed, a decrease on 13,852 in cows and of 15,021 in other neat cattle, making a total decrease of 28,873 in three years. The number of cows had been previously quite steadily increasing for thirty years from 149,090 in 1861 to 200,658 in 1890.

The dairy is easily the most important branch of farming in Massachusetts. The State census of 1885 gives us the latest reliable figures. By that the value of dairy products was \$13,080,526; hay, \$9,676,893; other staple product, \$4,578,763;

fruit, \$2,386,290; vegetables (potatoes are included in staple products), \$2,762,941; animal products, \$5,398,439. The hay crop is quite largely dependent upon the dairy interest and the animal products are so largely dependent upon the dairy as to be almost a part of it. The veal product is certainly a dairy product, and most of the veal of the State is grown on the skim milk of our dairies.

If the killing of tuberculous animals is to go on without compensation to the owners this most important industry must rapidly decrease, carrying along with this decrease a still greater decrease in the value of much of the farming property of the State. The fine dairy barns that dot the farms of the State will become valueless and the pastures will be allowed to grow up to brush. The State can ill afford a decrease in its agriculture and in its agricultural population. If the fight against tuberculosis is for the public good, the public should make part at least of the sacrifice deemed necessary. Especially is this proper in view of the fact that many cases of tuberculosis in human subjects do not terminate fatally and many apparently recover. I quote from "Tuberculosis in Relation to Animal Industry and Public Health," by Dr. James Law. "Dr. Biggs tells us that in the Charity Hospital of the city (New York) 30% of all deaths show old lesions of tuberculosis now become stationary. He quotes a Vienna hospital pathologist to the effect that he finds similar old stationary lesions in 85% of all post-mortem examinations. This leaves but 15% who have not suffered from tuberculosis." It is not too much to claim that a like proportion of bovines slightly affected with tuberculosis would never be apparently injured by it. Such cases should be paid for in full if sacrificed for the public good. But it would be difficult for the officials to discriminate in the matter of allowance for cattle killed, and so it would probably be better to fix upon a portion of the value of the animal in health as the amount that should be paid to the owner of an animal condemned to destruction because infected with tuberculosis. I believe the owners of neat cattle, as a class, are unwilling

to bear all the burden. They believe that if the public takes arbitrary possession of their property and destroys it, that an equitable portion of its value should be returned to them. In view of all that we know about tuberculosis it cannot be absolutely determined what an equitable proportion is, and the matter must be decided by granting an arbitrary part of the original value.

The value of the animal condemned is but a part of the loss to the owner. His business is broken into; his herd is discredited; his customers are afraid of his product; and if permanent future immunity is to be gained by him, he must be to a large expense in disinfecting his barns and stables. This disinfecting is out of his line but is as necessary to the public health as is the slaughter of infected animals. The State should see that it is properly done, and it could be done cheaper and more certainly by agents of the State than by numerous private owners. Why should not the State provide for this very necessary part of the protection of public health. Dr. Law says in the paper quoted above "Sanitary laws which in any way ignore or disregard the rights of property have within them the seeds of defeat.

"If the stock owner is not fairly reimbursed for his animals slaughtered, and for other losses sustained for the protection of the public health and of the country's herds, unscrupulous men will find ample means of trading off the as yet incipient and occult cases of tuberculosis, thereby planting the infection in new herds. Compensation must stop short of making the sanitary bureau a profitable customer for tuberculous animals at sound prices, but it must be so liberal as to enlist the ready co-operation of the stock owner in having every infected beast safely disposed of."

The State is bound to protect the life and health of the people and is also bound to do justice to all parties. The State is also, for its own good, bound to foster agriculture, for no nation can long continue prosperous without a prosperous agricultural population. A large per cent. of the successful men of our

nation have always been from those born and reared on farms. It must continue to be so. And the more prosperous the rural population is, the larger proportion of able and faithful young men will it furnish for the service of the City, State and Nation.

FISTULA.

BY DR. J. T. NATTRESS, Delavan, Iowa.

A paper read before the Illinois State Veterinary Medical Society.

There are few questions in the whole field of veterinary science of which the young practitioner feels that he knows more, and the older wishes he did know more, than those of fistula. Aside from castration, there is probably no one class of patients with which country practitioners deal more commonly, and none are more disagreeable or more unsatisfactory. We discuss them at every meeting of an association, so do our sister associations, and yet we use about the same old treatment as did our predecessors half a century ago. They are just as dirty and just as disagreeable to treat, they are just as slow in healing and just as liable to recur again.

A thorough discussion in the anatomy concerned in the question of fistula of the cervical and anterior dorsal regions calls for the study of several pairs of muscles, nerves and ligaments, arteries and their associated veins, but will not discuss them minutely, for I trust you are one and all thoroughly acquainted with them and their location, if you have treated any number of fistula. I have no doubt but what you do; in ordinary practice, however, we rarely pay any attention to the small muscles; the larger ones are easily located.

For brevity sake, the blood and nerve supply will be left with the operator. An operator who cares to become an expert in the treatment of these cases must know where those muscles are, their origin, insertion, direction of the fibres and their

function. He must have definite ideas of the location, cause and distribution of the larger blood-vessels and nerves if he would make very deep incisions and punctures, as he sometimes must do. It is very unpleasant to cut the dorsal superior cervical, or even larger branches of the vertebræ, under several inches of muscular tissue. The lymphatic vessels call for some attention in this discussion, because of the special part they play in distributing certain pyogenic microbe bacteria. In external portions of the body they are arranged in two primary sets—superficial and deep:

Etiology.—The next question is that of cause and, like Darwin's first drop of protoplasm, some points are not easily explained. In discussing this subject under the topics of origin, sources from whence these microbes are received, mode of entrance, and factors which determine the location of the pre-fistular abscess, I wish to make the following remarks: That suppuration rarely or never occurs without the presence of pyogenic microbes or their products; that the initial abscess is usually the result of a local auto-infection; that fistula may be indirectly transmissible, due to any one or to a combination of several pyogenic microbes, and, therefore, not specific; that one attack gives no immunity, but predisposes to others; that external injuries may serve to fix their location, but are not to be regarded as primary causes.

Origin, Bacterial.—In the early days of antisepsis, when healing without pus was first demonstrated possible, we received the old dictum, "no micro-organism, no pus." Since those days this question has been argued back and forth by the most eminent writers of the present day. Dr. Senn, in his "Surgical Bacteriology," concludes that pus microbes are the essential causes of suppuration. Some admit that suppuration may occasionally be produced by deep injections of germfrer irritants like silver-nitrate, ammonia and turpentine. But I think the great majority of competent observers hold that the great and common cause is the presence and activity of pyogenic micro-organism in susceptible tissues, and that certain of these organ-

isms may be regarded as specific exciters of suppurative tissue changes.

Infection, Sources.—It is not difficult to enumerate sources from which infection may be received, but it is frequently impossible to prove a specific origin in any individual case. Pyogenic bacteria have a wide diffusion in nature, for they have been demonstrated in air, soil, water and a variety of foods. There is the old question of hereditary transmission, or transmitting living germs, and seems to be gaining ground with plenty of evidence in its favor.

Modes of Entrance.—There are three ways in which micro-organisms usually penetrate into our bodies: 1. From the surface of the skin, generally after it has been injured in some way. It does not, however, indeed always require such a special door of entry (*i. e.*, abrasion). 2. The digestive canal, into which the bacteria pass along with the food; many, it is true, cannot pass through the stomach in their usual form, being destroyed by the action of its acid contents. Other kinds are less sensitive, and when spores are present, or when disease has altered the character of the digestive fluid and weakened its bacteria-killing power, there is no further obstacle to the passage of the parasites. 3. The respiratory organs can afford entrance to the bacteria.

Locating Factors.—After discussing the bacterial origin, sources from which infection may be drawn, and mode of entrance, there remains the query, What determines the location of the pre-fistular abscess? It has long been a matter of dispute whether pathogenic microbes exist in healthy animal tissues. I think the view is gaining general support that such conditions are possible, but that these same microbes do not exhibit their pathogenic properties so long as they remain in circulating blood and every body tissue remains healthy. Then to furnish the requisite conditions under which these pyogenic microbes may exhibit their pathogenic functions, some susceptible tissue must become injured or diseased. The blood, or lymphatic fluid, must be checked in its flow at that point,

thromboses performed, and the microbes be permitted to locate and multiply. In other words, to locate a pre-fistular abscess there must be furnished a *locus minoris usis tentiæ*, which Senn defines as being an area of lesser resistance, due to a tissue injury which so changes the tissue that pathogenic microbes, previously present in the circulation, become arrested and find favorable conditions for multiplication. But recent tissue lesions are not the only factors which may serve to produce such an area of lesser tissue resistance. The presence of old pathological products, exposure, feeble performance of an organic function, and a variety of general and illy-defined factors, seem to produce conditions favorable to local infection.

The regions which fistula usually select are such as are liable to receive blows and bruises, given by angry attendants, received by passing under low sheds, or through low door-ways, or while rolling. Again, the soft tissues of these parts are mainly connective, and connective tissue areas are very prone to chronic suppurative processes and slow healing. Such, then, are the factors which serve to locate suppurative processes. There yet remain many questions regarding the history and work of pyogenic microbes for bacteriologists and chemists to answer. We all wish to know to what depth beyond the surface of a pyogenic membrane do these pus-producing germs reach. *Why does pus burrow?* Is it by pressure and absorption? or is it due to some mysterious part played by the microbes in their effect upon protoplasmic cell contents. We do not know so much as we would wish regarding the tendency of suppurative processes. Fistula sometimes heal rapidly and abscesses develop in the atlo-axoid region.

There are some strange features in such cases. Why do not domestic animals other than solipeds develop fistula?

Treatment.—Many annoying features in the treatment of these cases, which may be well understood and yet difficult to handle, for example, the well-known tendency to recur after indefinite periods of apparent soundness.

The conditions which experience has taught me are necessary to successful treatment are briefly,

1. Free escape of pus.
2. Destruction of the membrane lining old sinuses and cavities.
3. Removal of foreign substances, such as splinters of wood and diseased bone.
4. Establishment of an active granulating process.

The first I strive to gain at any cost. I accomplish such drainage by the knife trocar or cannula, setons of cloth, horse-hair, rubber tubing, shoemaker's linen thread. Sometimes we need a seton that will remain in place for a long period without decay. I have never tried to trephine the scapular, but I believe it can be done with advantage in those cases where a sinus runs down in that region.

In a few cases bottom drainage seems impossible. The only satisfactory substitute with me has been peroxide of hydrogen. Diluted nitric acid, carbolic acid, bichloride mercury, peroxide creoline, and the ordinary white lotion, have proven the most practical antiseptics. The production of active, healthy granulations sometimes call for all the ingenuity a surgeon can muster. Turpentine, common salt solutions, have given good results. Where cases are annoying and persistent, and the discharge nearly ceases, I apply a blister with good results. The only way to get rid of foreign substance is by bold surgery.

NAILS IN FEET.

BY JOHN A. BELL, V.S., Watertown, N. Y.

A paper read before the New York State Veterinary Society.

While nails in the feet are quite common in our every day practice I recently had a case which was a little out of the general line. We usually have nail in the foot, but this was nails in the feet, for both hind feet were found to be punctured at one and the same time, or, at least, the injuries were found at the same time. The case was a 1,500 pound horse belonging to one of my customers. It happened while I was attending our

last meeting in Buffalo, and I did not get an opportunity to see it for about a week after my return, the animal having been put in the hands of another for treatment. When I first saw the case the horse was standing in a single stall on a hard floor, having just been helped up. It seemed impossible for him to stand, so I concluded to place slings under him as soon as possible, until a box stall could be arranged, when he was placed in it with difficulty. He lied down almost immediately, and upon examination, I found the left leg badly swollen, with an exudation from the quarters. The wound had not been properly opened, and the pus was allowed to burrow and came out of the heels. The right leg had received a little better attention, the opening being large enough to allow the pus to escape.

Symptoms.—Very nervous; not able to walk; seemingly having lost the use of muscles; loss in appetite; temperature $105\frac{1}{2}$; respiration hurried; bordering on septicæmia.

Treatment.—Sedatives, to regulate temperature and nerves. Tonics, alteratives and stimulants to counteract septicæmia and improve appetite. Changed position from side to side three or four times daily. Removed all detached portion of sole and frog of left foot, dressing antiseptically three times daily and applying carbolized flax-seed poultice (warm.) On the right I used cold poulticing and this is the point I would like an interchange of ideas upon: whether hot or cold applications are preferable for the treatment of laminitis on nail in foot before suppurating, as there is quite a difference of opinion on this question, even amongst us to-day.

As soon as suppuration ceased, cold bran poultices were applied until the fever was reduced; then blisters were applied.

Complications.—Injury to navicular joint of left foot. Inflammation of pedal bone, or peditis in right, small quittor on each quarter of left foot and paralysis of lips due to injury while lying in stall.

The former yielded to cold applications and blisters; the quittors with peroxide hydrogen and poulticing; the lips with nerve stimulants and mild blisters over the nerve.

REPORTS OF CASES.

SPECIMENS FOR THE MUSEUM OF THE AMERICAN VETERINARY
COLLEGE.

Sent by DR. R. H. HARRISON, D.V.S., Atchison, Kan.

1. *Bony Tumor*.—This was hollow and taken from the right hind leg of a 16-hands brown mule, eight years old. Was seen by me at Kansas City. Had been treated by several veterinarians without success. Advised her to be surgically treated. The tumor was well defined, situated at the lower external extremity of the tibia, and was irritated by the trace, the animal being worked on the off side.

Operation consisted in enucleation, which was quite simple. The aponeurosis of the lower tibial region was *internal* to the tumor, its external covering being skin, and an amount of connective tissue and plastic deposit. Its contents were bloody serum and the debris of broken-down tissue. The remarkable fact to me in this case is that the openings were directed inwards; otherwise the animal was healthy and showed no bony deposits elsewhere. The case did very well, and after a year showed no sign of operation.

2. *Hydrocephalus Head*.—A black draft mare, six years old, 16-hands high. Called to attend during labor after she had been suffering twelve hours. Examination showed anterior presentation with fore-legs turned back, and head turned to the side and downwards. After straightening fore-extremities and bringing them out, made out that the head was enlarged, and will admit that I was very much puzzled by the softness of the frontal space, which you will see in specimen that the bone is absent. Found, after several hours of *very* hard work, that I could not straighten head, although I had a hook in the nose and a repeller against the chest. So advised destroying mare as her condition was very bad; the pains were something extraordinary. Send you the head, which was covered with skin and hair. Brain seemed to fill cranial cavity completely, and was quite solid.

PERITONEAL RESISTANCE IN THE DOG.

By C. E. CLAYTON, D.V.S., Bridgeport, Ct.

The 17th of this month I spayed a spaniel bitch, did it the best I could, and didn't see her again till the following Wednesday. The wound was united perfectly, and told the owner to keep bandage on. Saw owner Saturday following and advised him to keep bandage on for two or three days longer, but he took it off the next day and didn't wash her. To allay itching, she tore it open, and when I saw her there was about one foot of intestines hanging out, and the outer coat bitten. Washed them thoroughly with warm creolin water, and sewed up again. Saw her this Thursday past, and it was all healed again. To me, a young practitioner, this effect of antiseptic and of peritoneal resistance, even in a dog, is somewhat wonderful.

EXTRACTS FROM GERMAN PAPERS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

TUBERCULOSIS IN SMALL ANIMALS.

In the eight years embraced between 1886 to 1893, the Berlin hospital for the small domestic animals (connected with the Veterinary College) treated 40,000 patients.

Among these tuberculosis was proven 281 times; a confirmation *intra-vitam* was, until the introduction of tuberculin, exceeding unreliable and difficult. In general this affection was seldom found in the dog, more frequent in the feline species and most common in birds, the parrot seeming most to suffer its deadly termination.

From among 625,000 sick dogs, phthisis was proven 27 times—0.04%. Out of 615 cats, 6 had the affection; these were in the last two years, and were discovered with the aid of tuberculin. In striking contrast to these figures we ascertain the mortality of the parrot to be 170 out of a total of 700 sick—25%.

In other localities, the occurrence of the disease in canidæ is more frequent. Jensen, Copenhagen, records 28 cases in a very short time; Cadiot found, between 1891 and 1893, out of 900

patients a death of 40 (not diagnosed during life). Föhner also used tuberculin as a diagnostic means. This substance proved of great worth when applied in the dog, although the objection of uncertainty is here again urged against it.

Single instances of consumptive dogs failed to respond to the injection, but as a rule, when the effect was secured it came more precipitate than in bovidæ. In one case the temperature mounted from 101° to 103° F.; post-mortem exposed phthisis, lesions and bacilli.

In another animal the effect was first apparent after the lapse of six hours, and then was indicated by an increase of only 1° F., which subsided two hours later.

Here tuberculosis was discovered and also bacilli; the dose each time was 0.05 grammes with 3 ss of a $\frac{1}{2}\%$ carbolic solution.—*Monatschrif. f. Thierheilk Bd. x.*

OPERATION FOR CHAMPIGNON.

A ten-year-old gelding, which had been castrated at six years, had exhibited symptoms of scirrhus cord for one year. The patient ambulated with a characteristic habit of spreading the posterior limbs, going lame in the left one and finally becoming unable to move. Robust health prevailed previous to this, and even now the constitution did not seem influenced by the drain of suppurative products from the canal.

Six grains of morphia sulph. were inhibited, as well as three and a half ounces of chloroform given as an inhalation, requiring eight minutes; during the operation the same quantity of the anæsthetic was administered by dropping slowly on a tense towel held over the nostrils.

The left spermatic cord was entered by four tracts, which ultimately merged into two, one of which directed its course anterior to the penis, and the other to the inguinal canal. The former was dissected from the cavernous tissue of the sexual organ, and the latter, when secured as high as the external inguinal ring, was ligated with an elastic bandage; the circumference of the thickened cord at this point was six inches. The

right cord was considerably smaller and easily extirpated by shelling, so to speak, from its adjacent envelopes.

The operation consumed two hours, but without the loss of much blood. The animal stood upon its feet at the termination of the same, and was led into the stable. The respiration at this moment was accelerated and somewhat labored, horse slightly uneasy. In an hour the breathing became more a dyspnœa, an abundant sweat transuded, patient succumbed.

The post-mortem, undertaken immediately, exposed the left side of the heart intensely filled. In the splenic vein a yellow, brittle and dry thrombus; these were also found in the various veins of the portal system.

From the fact that no vertebræ fracture or excessive hæmorrhage took place at the time of the operation, the death was supposed to be superinduced by the chloroform.—*D. Th. Wochenschrift.*

LEUCOCYTHÆMIA IN EQUIDÆ.

A ten-year-old horse, previously healthy, evidenced sudden weakness and unsteadiness of gait, with a great disposition to assume the recumbent position.

Pulse regular and 68 per minute; respiration superficial, numbering 30; temperature 104° F.; mucous membranes tinted a yellowish grey. The succeeding day these symptoms better marked and more intense. Third day the same still more pronounced with great weakness, anæmia of visible membranes and œdema along the median line extending from the pectoralis to the gracilli muscles. Patient succumbed on this date.

Upon examination about fifteen quarts of a reddish yellow fluid were obtained from the abdominal cavity. The liver, enormously hypertrophied, occupied both the right and left hypochondriac regions. Lymphatic glands along the colon and cæcum enlarged to ten times their normal dimensions. In the folds of the mesentery, globular reddish gray nodules in abundance.

These augmented glands were soft, and upon transverse

section offered a grayish surface streaked with reddish lines. At the apex of the cæcum a cyanotic formation as large as a goose egg. Lining membrane of stomach normal. Interior of the small intestine opaque and gray-red; same of colon and cæcum exhibited hæmorrhagic infiltrations with several erosions of considerable extent.

The liver weighed 84 pounds, 8 inches in thickness and 40 inches broad; reddish brown and friable; also the same peculiar strips of coloring observed in the lymph glands.

In the hepatic parenchyma innumerable tumors as large as a mustard seed. Lobes of the organ not distinguishable, and within its substance several cavities surrounded by dark red walls. Spleen swollen and measuring 20 inches in length, 16 in breadth and 2 in thickness; of a gray-blue color externally, with a yielding, not to say mushy interior. Malpighian bodies enlarged to the diameter of a pea.

Both kidneys hypertrophied and soft, with light yellow lines running from the papillæ to periphery. Contents of the infundibulum and pelvis of the organs slimy and containing pus. Bronchial and laryngeal glands augmented.—*Ztschr. f. Vet. Kunde* I.

TUBERCULOSIS OF THE PENIS.

A number of nodular tumors, being situated on the penis of a bull, rendering the animal useless for propagating purposes, it was decided to castrate in order to further utilize the beast for draught purposes. Not long after this operation the same was slaughtered, and the lower portion of the penis—that part formerly containing the tumors—sent to the veterinary university in Dresden. Approximately 10 inches removed from the urethral opening two nodules were situated, which were about the size of a hazlenut. These were imbedded in the parenchyma of the organ.

Transverse section of these revealed a structure of cancellated tissue, which contained as its center a crumbling mass of whitish suppurative debris. About three inches anterior to the

above tumors the penis suddenly enlarged, being at the prepuce six inches in circumference.

Careful dissection exposed this expansion to be due to numerous hard bodies occupying the *intima* of the corpus cavernosum. Also numbers of the same nodules beneath the skin constituting the prepuce. Membrane of urethra normal in appearance; the presence of bacilli could not be proven by the Zihle-Gabbet method. Upon a thin section, obtained from the nodules themselves, great numbers of the bacilli could be detected. Subjected the same to the Koch-Ehrlich treatment.

From the character and extent of the infection it is highly probable that these organisms had been primarily acquired through the act of copulation, and secondarily by some imperfection or abrasion in the epithelium forming the cutis.—*D'tsch. Ztsch. f. Thmd.*

TETANUS IN THE CALF.—Glocke observed tetanus in the calf three weeks after castration. Tympanites was present. The masseter was strongly contracted and tense; the gluteal and caudal muscles were in a similar state. The tail was elevated and carried to one side of the mesial line; voluntary motion was not attempted. Upon examination, the wound proved to be in a healthy condition of cicatrization; the animal was slaughtered.

CHRONIC SUPPURATIVE INFLAMMATION OF THE SPLEEN.—A ten-year-old cow had continued to emaciate for six weeks, finally becoming so weak as not to be able to rise when down. The post-mortem revealed the spleen to be greatly hypertrophied; the same weighed 15 pounds and measured 23 inches in length, 8 in breadth and 3 in thickness, having withal a capsule much thickened. The parenchyma was a mixture varying in color from a bright yellow to a dark brown, and contained numbers of abscesses and collections of blood, pus and debris throughout its extent. Other pathological conditions were not found upon the animal.

ENTERIC CALCULI.—A heavy draught horse used for milling purposes, was subject to recurrent attacks of intestinal spasm, which, however, always yielded to the usual treatment of eserine

and warm water clysters. By examination per rectum the author was enabled to detect a solid, unyielding and stationary mass, situated in the pelvic flexure of the colon. Three days later the patient experienced another paroxysm to which he succumbed. The post-mortem exposed two stones or calculi, one within the other. The weight of these indicated respectively $8\frac{1}{2}$, $7\frac{1}{2}$ pounds.

NICOTINE POISONING IN THE HORSE.—A horse having the itch was subjected to a wash composed of an aqueous solution of nicotine, the latter obtained from the cleanings of tobacco pipes. As this did not seem beneficial, the pure article was applied over a part of the body with the result, that in ten minutes symptoms of intense poisoning were manifest. The subject begun with an abundant diaphoresis, trembled, and was very weak and unsteady. The cervical muscles were excessively contracted and hard; the head extended; conjunctiva dark red. Pulse 90 per minute, full, hard and quick. Legs and ears cold; respiration difficult and resembling that induced by intravenous injections of *veratrum viride*. The animal was quickly cleansed over the whole body with warm soap solutions, and received internally 3 iiss of *ac. tannici*. The symptoms disappeared in an hour.—*Ztsch. f. Vet. K.*

MYCOTIC GASTRO-ENTERITIS.—Territorial veterinarian Wilhelf performed post-mortem upon two cows which had died under the following symptoms: High fever, anorexia, cessation of urination, tympanites, dry *fæces* mixed with halmonshagic elements, cyanotic membranes, paralysis of the posterior extremities and rapid diminution of the vital forces. In the stomach proper, and in the ileum an intense inflammation had encroached upon the walls; this was associated with a secondary peritonitis of a septic nature. The small intestine was partially occluded by a bloody thin fluid, and the abdominal cavity contained a great quantity of a yellowish red and fetid effusion. The animal had been fed with turnips etc., which were in a state of semi-decomposition and covered with mould.

PROFESSIONAL ITEMS.

By N. N. S.

The last annual meeting of the Pennsylvania State Medical Association proved to be one of unusual interest, and many were the important topics considered. [We know it was, though we were favored with only one of the interesting papers read there.—ED.]

Secretary Lee, of the State Board of Health, favored by his presence the recent annual meeting of the Pennsylvania Association, and warmly encouraged them in their efforts to promulgate better laws for the control and suppression of contagious and infectious diseases among live stock.

Pennsylvania veterinarians will consider the wisdom of urging the passage of a State Veterinary Examiner's bill, which will examine and pass upon the qualifications of all future veterinarians desiring to enter practice in that state.

Wisconsin veterinarians have fallen into line and are agitating the question of better laws to control and eradicate tuberculosis.

There is a distinction without a difference between a resignation requested and a dismissal from office. It eases one's feelings, perhaps, to have the privilege of resigning, but when there is something added that it is expected within a few days, one might as well be decapitated peremptorily.

The semi-annual meeting of the Pennsylvania State Veterinary Medical Association will be held in September next at Harrisburg, the capital seat.

President Hoskins has called to the vacancy caused by the resignation of Dr. Gadsden on account of illness, Dr. C. C. Lyford, of Minnesota, to a position on the committee having in charge the Congress of Colleges. In higher veterinary education Dr. Lyford has been a pioneer.

Drs. Stickler and Baldwin of the State Sanitary Association have been elected honorary members of the Veterinary Medical Association of New Jersey. They are warm friends of the veterinary profession.

The veterinarians of New Jersey have a strong support of the State Sanitary Association, a very active and aggressive body.

Germany has already started an agitation against the exported products of pork from this country, strongly criticising the character of our microscopic investigations.

The Veterinary Medical Association of New Jersey is to be congratulated on the selection of Dr. W. B. E. Miller as president this year. It means active effort in the securing of active legislative enactments.

The people of New York should demand that the good work of exterminating tuberculosis should go on. The proposed legislation creating a commission may only be any easy way to check the good work.

The New Jersey Veterinary Medical Association, on the report of their committee, have approved of a good law for the control and eradication of bovine tuberculosis, and had the same introduced in their legislature on March 12, 1894.

The outbreak of glanders in Hoboken has been restricted in its disastrous results through the efficient work of Drs. Gerth and Dixon.

Secretary Hunt, of the New Jersey Board of Health, who took a keen and lively interest in the efforts to create a higher standard of veterinary education in this country, died at the beginning of last month.

Bulletins No. 43 and 53 of the Auburn, Ala., Agricultural Experiment Station, edited by State Secretary Cary, contain much valuable information that must surely lead to a higher appreciation of the profession in the South.

What has become of the "Philadelphia Veterinary Society"? Dr. Rogers, the president, should rise up and explain.

The recent meeting of the Michigan Veterinary Medical Association was a very successful one, and two sessions proved too short for the proper consideration of their programme.

VETERINARY LEGISLATION.

REGULATING VETERINARY PRACTICE IN OHIO.

A BILL to regulate the practice of Veterinary Medicine and Surgery.

SECTION 1.—*Be it enacted by the General Assembly of the State of Ohio*, That all persons who now, or shall hereafter, practice veterinary medicine and surgery in the state of Ohio, and have not been exclusively engaged in such practice for at least five years prior to the passage of this act, shall be examined as to their qualifications by a state board of veterinary examiners, to be appointed as hereinafter provided.

SECTION 2.—Any one who successfully passes the examination before the state board of veterinary examiners shall receive from said board a certificate signed by the members thereof, which certificate shall state that the person to whom it is given has passed the prescribed examination and is competent to practice veterinary medicine and surgery. A copy of such certificate shall be recorded by the clerk of said board in a book kept for that purpose which shall be open to the public inspection.

SECTION 3.—Persons who have passed the requisite examinations and received a certificate from the state board of veterinary examiners, and those who have continuously practiced veterinary medicine and surgery for at least ten years prior to the passage of this act, and no others, shall be qualified and be entitled to be employed as veterinaries by the State Board of Agriculture, State Live Stock Commission and State Board of Health.

SECTION 4.—The State Board of Veterinary Examiners shall consist of five members. The Secretary of the State Board of Agriculture and the Secretary of the State Board of Health shall be *ex-officio* of said board. Three members thereof shall be appointed by the Governor and confirmed by the Senate for the terms respectively of two, four and six years, and every two years thereafter the Governor shall appoint a member for the term of six years. Vacancies in said board shall be filled by appointment for the unexpired term. The members so appointed by the Governor shall be graduates of reputable but different veterinary schools or colleges, and men of superior learning, personal skill and good moral character.

SECTION 5.—The board shall meet twice a year—in April and July—in the city of Columbus. At the first meeting the board shall organize by electing from its members a president, secretary and treasurer, who shall hold their offices for two years or

until their successors have been elected and qualified. The Secretary shall keep an accurate record of the business transacted and of the certificates as heretofore provided. He shall collect the fees to be paid by the applicants for examination and pay the same over to the Treasurer, and shall perform such other duties as the board may prescribe. He shall keep a correct account of all moneys received and disbursed.

SECTION 6.—The board shall receive three dollars per day while in session, and their actual traveling expenses, to be paid by the Treasurer out of the fees paid by the candidates for examination.

SECTION 7.—A certificate shall be issued only when the board is satisfied that the candidate examined is well qualified and entitled to a certificate. The candidate, if unsuccessful, shall not be eligible to another examination until the expiration of one year thereafter.

SECTION 8.—Candidates shall present themselves for examination at the regular meetings of the board, and shall pay for each examination the sum of ten dollars, which shall accompany their application in writing, and be paid to the Secretary of board previous to the regular meeting of the board. One-half of the ten dollars shall be returned if the candidate fails in the examination or if a diploma is accepted in lieu of an examination.

SECTION 9.—The board may accept a properly issued diploma in lieu of an examination; but such a diploma shall be accepted only if it has been issued by a reputable veterinary school or college that requires a three-years' course of study and gives instruction in all the various branches of veterinary science.

SECTION 10.—Whoever shall engage in the practice of veterinary medicine or surgery in violation of this act shall, for the first attempt, be fined not less than ten dollars, and for the second offence not less than fifty dollars nor more than one hundred dollars, or be imprisoned in the county jail not more than sixty days, or both. Provided that nothing in this act shall be construed to prohibit any veterinary advice or assistance in cases of emergency if rendered by a person not entitled to practice under this act. Nor shall it apply to animal castration or dehorning of cattle.

SECTION 11.—This act shall take effect and be in force on and after its passage.

THE NORMAN OR COTENTIN BOVINE RACE.

By MR. GUILLOT, Secretary, Herd Book (Calvados).

If meat is the principal production of the breeding of the bovine race, it must not be forgotten that in certain cases the milk production also gives important profits.

The Norman race unites perfectly these two essential qualities: the abundant production of a very rich milk and that of an excellent meat. A good Norman milch cow gives daily, on an average, from 25 to 30 quarts of milk, which furnish at least

2 pounds of that excellent butter, the reputation of which is undisputed.

The necessity of a good choice of domestic race acquires considerable importance at our epoch of universal opposition in all agricultural productions; we invite, then, the serious attention of breeders to the remarkable qualities of the Norman race.

Of a deep-dark coat, very often mixed with white spots, the Norman race offers a variety of color, which takes nothing away from the homogeneousness of that race very ancient and endowed with an excellent herd-book very rigorously established. The Norman cow has a large head, with eyes very prominent, the muzzle is thick and turned up, the horns are fine and bent forward, the skin is supple, the breast wide and spacious, the back is straight and the train behind of fine amplitude. The general conformation is then that of a good animal for butchers. An udder, well made and of good dimension, covered with a fine and supple skin, extends even under the belly, and permits us to see on its surface big lactiferous veins, a certain sign of the copious function of the udder.

The Norman race holds in French breeding the best place. It spreads more and more in the regions of the north and east of France, but especially in the environs of Paris and the large towns, where its milk and butter qualities are highly appreciated.

The Belgian breeders who have had the opportunity of appreciating this race and of buying a certain number of the international establishments of Antwerp (1886) and of Brussels (1888) are at present making a large importation, As fruitful a milking cow as the Dutch and Flemish, she is far superior to these last by the quality of the butter. The acclimation of this race in Belgium has caused no disappointment, thanks to its rusticity, demanding only good food in the cow house or good pasture.

Although the Norman race is not delicate, it must have abundant nourishment. It would be childish, in fact, to expect a considerable yielding in milk and meat from animals fed par-

simoniously. Experience has proved that the same quantity of fodder consumed by 10 cows gives more milk and profit than if it was consumed by 15 or 20 cows. Every milking cow ought to be well fed, and the breeder who considers his interest will never forget this Swiss proverb: "A cow is like a cupboard—you cannot get out of it anything that you did not put into it."

The Norman cow reaches the weight of 1200 to 1800 pounds, and keeps always an aptitude suitable for fattening, which permits it to supply for slaughter, after an abundant lactation, a return of meat very remunerative. It is in the breeder's interest to possess cows which, after having furnished him with a great quantity of milk can be sold off without any heavy loss. This double destination has besides a far greater advantage for breeding, for the male calves which are not kept as bulls furnish oxen that are quickly developed and soon get fat. The Norman oxen fatten at the age of $2\frac{1}{2}$ years, or 3 years reach the average weight of 1600 to 2000 pounds. It is not rare to find subjects weighing 2400 pounds at the age of 2 years. The meat is excellent, and so much appreciated on the market of La Villette (Paris) that it obtains currently a better price by $\frac{1}{4}^d$ or $\frac{1}{2}^d$ ($\frac{1}{2}$ to one cent) per pound than the special races for the shambles such as the Durhams, the Limousins, the Nivernais or their derivatives.

When the Norman race is better known it will obtain promptly that reputation which has perhaps been granted with too much infatuation to other races.

Let us add, in terminating, that the Norman Herd Book, created in 1883, and of which the seat is at Caen, Calvado, counts at present a considerable number of inscribed animals, sires and dams (about 7000). and that this institution puts under shelter from all foreign contact the purity of this excellent and fine Norman race, which has long been proclaimed the first milking race in the world.

For every information about Norman breeding apply to the correspondent of the Norman Herd Book, J. B. Guillot, at Mr. Chester W. Chapin, No. 1 Broadway, New York City.

NOTICE.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

Editor of the AMERICAN VETERINARY REVIEW:—

DEAR SIR:—The proceedings of the United States Veterinary Medical Association for the year 1893 will likely be ready for distribution in about thirty days.

Yours truly,

T. J. TURNER, *Sec.*

SOCIETY MEETINGS.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the California State Medical Association was held on June 13, 1894, at the Baldwin Hotel, San Francisco, Cal.

The meeting was called to order by the President, Dr. H. A. Spencer.

Upon roll call the following gentlemen answered to their names:—Drs. Whittlesey, Fox, Spencer, Sr., Spencer, Jr., Forrest, Egan, Robin, Williams, Hoggarty, Pierce, Eddy, Maclay, Jackson, Orvis and Archibald; visitor Dr. T. T. Twombly, Logan, Utah. The Board of Examiners reported favorably on the name of F. Forrest, and recommended that he be admitted to membership, which was voted upon and carried. The committee on certificates and that on legislative matters made their reports which were ordered on file.

Under the head of reading of papers, discussions, etc., Dr. D. F. Fox of Sacramento, read the following very original and instructive paper on "Diseases of the Liver as a Direct Cause of Intestinal Disturbances."

DISEASES OF THE LIVER AS A DIRECT CAUSE OF INTESTINAL DISTURBANCES.

MR. PRESIDENT AND GENTLEMEN:—In compliance with the request of our honorable President, and in order to assist in a small way in making our meetings as interesting as possible, I have, to the best of my ability prepared a short thesis on "Diseases of the Liver as a direct cause of Intestinal Disturbances," which I will now submit to you for your consideration.

This is a subject, gentlemen, which I have paid particular attention to in the last couple of years, and owing to its insidious and complex nature, and it being a subject which is so difficult to ameliorate and which in my experience does not readily yield to treatment, I naturally feel very anxious and ambitious to learn, from the exchange of ideas of those present here to-night, more about the pathology and treatment of intestinal disturbances. With this end in view I have attempted to advance a few ideas in which I hope to show that the majority of intestinal diseases are due to hepatic disturbance.

In order, therefore, to approach this subject in a comprehensive manner, we will first take up the consideration of the liver and its physiological properties.

As you all are aware, the liver being the largest as well as one of the most complex and important glands in the animal economy, and as it has some very essential and rather complex functions to perform, it is very easy to understand how any deviation from its normal condition will cause derangements of the alimentary tract.

The most important and one of the chief functions, the liver has to perform is the secretion of bile, the only one which pertains to the subject under consideration. There are, however, other functions, notably the one that controls the effect upon the blood during its transit through the hepatic circulation, whereby the blood is fitted for its subsequent purposes in the animal economy.

The secretion of bile is continually going on, but it appears to be greatly retarded during the period of fasting, and accelerated on the prehension of food, as has been shown by different experiments made by establishing a fistulous opening on the outside, it was noticed that during the period of fasting there was scarcely any bile discharged, but upon partaking of food an abundance of bile was discharged in a very few minutes.

The purpose served by the secretion of bile may be said to be of two principal kinds:—Excrementitious and digestive. From the peculiar manner in which the liver is supplied with much of the blood that flows through it, it is possible that this organ is excretory, not only for such hydro-carbonaceous matters as may need expulsion from any portion of the blood, but that it serves for the direct purification of the stream which arriving by the portal vein has gathered up various substances which may need be expelled almost immediately after their absorption, for it is easily conceivable that things may be taken up during digestion which are not only unfit for the purpose of nutrition but which would be positively injurious if allowed to mingle with the general mass of blood.

The liver therefore may be supposed, placed in the only road by which such matters can pass unchanged into the general current, to jealously guard against further progress of effete matters and turn them back again into an excretory channel. One

chief function of the secretion of bile is purification of the blood by ultimate excretion of effete matter, yet there are many reasons for believing that it is in the intestines where it performs its most important function in the process of digestion. In nearly all animals the bile is discharged, not through an excretory duct communicating with the external surface nor with a simple reservoir as most secretions, but it is made to pass direct into the intestinal canal, where it mingles with the chyme directly after it leaves the stomach, an arrangement the constancy of which clearly indicates that the bile has some important relations with the food with which it is thus mixed. A similar indication of its digestive properties is furnished by the fact that the secretion of bile is most active, and the quantity discharged into the intestines, much greater during digestion than at any other time, although, this activity may, in part be due to the fact that a greater quantity of blood is sent to the liver through the portal vein at this time, and that this blood contains some of the materials of the food absorbed from the stomach and intestines which may need be excreted either temporarily, to be afterwards reabsorbed, or permanently.

Bile is a somewhat viscid fluid of a yellow or greenish color, it has a strong bitter taste, and when fresh has scarcely any perceptible odor, it has a neutral and slightly alkaline reaction, its color and degree of consistency vary considerably, apparently independent of pathological changes in the liver. The saline or inorganic constituents of the bile are similar to those found in most of the other secreted fluids, the neutral phosphates, carbonates of sodium and potassium do not exist in the fluid state, but are formed during the act of incineration and are found in the ashes. Oxide of iron is also said to be common constituent of the ashes of bile, copper is usually found in healthy bile and continually in biliary calculi.

Regarding the functions discharged by the bile in digestion, it may be said that it assists in emulsifying the fatty portions of the food, and thus rendering it capable of being absorbed by the lacteals. It has considerable antiseptic properties and may prevent decomposition, purification and fermentation of food during its passage through the intestines. It also acts as a natural laxative by promoting an increased secretion of the intestinal glands and by stimulating the peristaltic action of the bowels, thereby assisting them in the propulsion of their contents.

Let us now for a moment consider in what manner we can arrive at a conclusion as to how we can account for the fact that intestinal disturbances are the result of morphological changes in the hepatic gland. As we have already stated the liver is a very large organ and has some very important functions to perform of which perhaps the most important is the secretion of bile; bile therefore being a very essential substance in the process of digestion, it is perfectly plausible that an insufficiency or a preponderance of this important fluid, will and does at once lead to intestinal derangements.

Being fully cognizant of the fact that one of the chief functions of bile is to act as an antiseptic, by preventing the food with which it comes in contact, from undergoing the processes of decomposition and fermentation, we can readily see that an insufficiency of this very important material will allow the the ingesta or contents of the intestines to become septic, putrid or fermentitious, a condition which is frequently demonstrated by the foetid aroma which always attends the faecal matter of these cases. Again bile being a natural carminative, an insufficiency of it will frequently be shown

in the so-called flatulent colic, which formerly was supposed to be due simply to fermentation of the food. Bile also acts as a natural purgative by increasing the secretion of the intestinal glands, therefore, if the supply is curtailed we are pretty sure to have indigestion, constipation, etc., follow as a sequel. If however, the supply is increased beyond normal we have as a sequel diarrhoea, and I might state in this connection that it is my opinion that a great many cases of chronic diarrhoea are caused by a preponderance of the bile being thrown into the intestines a condition which is due to an over active liver. Bile acting as a local irritant stimulates peristaltic action of the bowels and increases the vermicular motion, thereby propelling or forcing the food through their channel; knowing this fact we can readily see why a lack of this natural irritant which produces peristalsis will be followed by torpidity, paralysis, impaction, inflammation, and gangrene of the intestines. While it is possible to attribute and perhaps trace all lesions of the intestinal tract to be due to a morbid liver, yet I do not wish you to think that I advocate this idea, for I am fully aware of the fact that there may be and are numerous diseases of the intestines which have no connection with and are independent of any pathological changes in the liver, but as there are so many intestinal disorders which are liable to follow hepatic disturbances, I would suggest that a very rigid examination of the liver be made when called upon to administer to any animal affected with any disease of the visceral organs.

In establishing proof or in substantiating the above statements, I will with your kind permission describe one of these particular cases which in my estimation have their origin in the hepatic gland. For instance, you are called to see a case which on your first examination will be lying down in the recumbent position or standing in the stall, comparatively speaking, quiet, but upon closer examination you will notice that from time to time he will look around at his flank, or elevate the head and turn up the upper lip. If we now, supposing the animal to be lying down, make him get up, he will walk around the stall a few times and will apparently make at intervals attempts to urinate, or to lie down again, finally if he does not lie down he will go into one corner of the stall and stand there for some time in an attitude apparently of repose. Upon still closer examination you will find the pulse running from forty to sixty, temperature one hundred and one to one hundred and two, the conjunctivæ will be of a dirty reddish yellow color. If you now manipulate the mouth you will find that the tongue and mouth have a furred and soapy feeling, and the breath has a sour foetid odor; upon auscultation at the flank you will notice an absence of borborygmous sounds that clearly indicate that there is an absence of perisaltic action of the bowels, upon percussion over the region of the liver on the right side the animal usually evinces pain. The fœcal matter passed is dry, hard and thickly covered with mucous and is passed in small quantities, in some cases the sphincter ani has lost its contractability which leaves a permanent dilation of the rectum. If no relief is given the animal will usually linger on in this condition apparently with no perceptible change for from eight to twelve days when you will notice a change for the worse, when enteritis sets in and the animal quickly succumbs to its baneful effects. If properly treated however, a successful issue may be looked for in from three to five days.

Now, gentlemen, believing that all of you have from time to time been called to prescribe for like cases when you felt as I have done on numerous occasions that you were, if you will permit me to use a hackneyed expression, "at sea" regarding the

particular lesions you are to prescribe for; having this circumstance in mind I concluded by presenting this matter before this honorable body, through whose experience and exchange of ideas I can reach a conclusion as to what manner I can therapeutically prescribe for these cases, so I can endeavor to remove the cause and not as I believe I have been doing heretofore, endeavoring to remove the effect.

The President called upon Dr. Spencer, Jr. to open the discussion, which he did by saying that he had been called upon to treat a great many cases such as described by the essayist, and he fully concurred with the essayist, in that the primary lesions in the sex cases, are to be found in the hepatic gland, in the majority of cases. The discussion was also participated in by Drs. Orvis, Whittlesey, Maclay, Twombly, Archibald and Egan. They all complimented the essayist on the originality of his remarks. Some of the members, however, did not agree with essayist and stated that it was their opinion that if there was liver disease present in these cases, it was purely a secondary lesion. Dr. Egan mentioned a very interesting case in which the cause of death was due to hepatic lesions. Dr. Spencer, Jr. said that he had treated the disease with aloin followed by tonics with good success. The secretary stated that he had treated these cases with drastic purgatives without success, but since he had applied treatment toward the amelioration of hepatic derangements, he had quite a decrease in the mortality of the cases he was called upon to treat.

Dr. Whittlesey said he had held post-mortems on several of these cases without discovering any changes in the hepatic gland.

The President closed the discussion with a few well chosen remarks. He said this was a subject which should receive a great deal of attention at our hands; he believed there were a great many cases of intestinal disturbances due to hepatic lesions. In closing his remarks he stated that he thought that we were as an association very fortunate in having a membership of gentlemen who were particularly desirous of introducing at our meetings, subjects of which very little is known, in order that in the exchange of ideas which follow the reading of the papers,

points would be raised, which would lead us, or enable us to treat these cases on a more scientific basis.

Dr. J. H. Eddy of Stockton was then called upon to entertain the meeting, which he did by reading a very practical thesis on "Tetanus."

TETANUS.

MR. PRESIDENT AND GENTLEMEN:—At the last meeting of this Association, I was appointed by our honorable President, Dr. Spencer, to write a paper upon some subject pertaining to the veterinary profession. I do not propose by presenting for your consideration this paper upon the subject I have chosen, which is Tetanus, to speak much from practical experience, but nevertheless the following may serve to refresh your memories and perhaps give some of you new ideas.

The word tetanus is derived from a Greek word which means to stretch. It is a specific disease characterized by continual contractions of the voluntary muscles and later the involuntary, with tension and rigidity of the parts affected. When the term tetanus is used it applies to the whole body being involved, it is often seen where only the muscles of mastication are involved, it is then called trismus, if the muscles of the cervical and dorsal regions are involved it is called opisthotonos, if the muscles of one side are involved the term tetanus lateralis is used.

This disease is now considered to be due to a micro-organism, which is a drum stick shaped bacillus called the bacillus tetani or the germ of Nicolair, so named from the discoverer who discovered it in 1886, but it seems that Rosengoff and Koch found it at about the same time. The germ has a spore of reproduction at one end, and is anærobic in character. This fact is quite important; we will understand by this why a small puncture or closed wound is more liable to be followed by this disease than a large open one. No doubt some of you have seen cases where tetanus developed after a wound had almost completely healed, it then having the nature of a closed wound, the anærobic character of the germ explains this, the exogenous character of the germ was discovered by Nicolair, April 1887; he found it in the soil especially around old gardens; it is found in horse manure, also on surgical instruments improperly cleaned after they have been used on a wound infected with the germ, and it may be transmitted in this way from one animal to another. In the diseased animal the germ remains near the seat of introduction, and it is found in the secretions of the wound, in the nerves leading from the wound, and some claim to have found it in the spinal cord. The presence of the oxygen of the air causes the germ to remain in a partial dormant state, but as soon as it is introduced into a wound, where the air is excluded, combined with the heat and moisture it causes it to develop and reproduce. Kitasato, a Japanese student in Dr. Koch's laboratory isolated the soil bacillus and reproduced the disease in animals by inoculation, thereby proving that the germ found in the soil was identical with that found in the wound of an animal affected with the disease. Prof. Kitt of Munich made some interesting experiments in the way of inoculating several horses from a horse that had died from tetanus; he says that tetanus in the horse is caused by a bacillus identical and resembling that of human and soil bacillus. Another interesting contribution on this subject is that of Dr. Bassano whose excellent

work in demonstrating to us the presence of the bacillus tetanus in different soils. He found upon examination of forty-seven different soils from different countries that twenty-three contained the bacillus. From the various clippings I have here presented I think we can be safe in arriving at the following conclusions; first, that tetanus is a specific infectious disease; second, that the specific germ does exist outside the animal economy; third, as the germ is found in the soil, dry dust, manure, etc., it is quite difficult to determine from where it first takes its departure. The observations of Sarmoni should not be overlooked in regards the action of the intestinal secretions upon the bacillus, he says he has caused herbivorous and carnivorous animals to swallow pure cultures of the bacilli, by this means he came to the following conclusions: first, the flesh of animals that have died from tetanus can be eaten with impunity; second, the microbe of tetanus can pass through the alimentary canal of carnivorous and herbivorous animals without causing any symptom of the disease; third, the digestive secretions of these animals neither kill or in any way alter the bacillus; fourth, an animal can swallow a dose of tetanic virus two thousand times greater than that which is sufficient to kill if injected subcutaneously. The traumatic form is due to a wound or abrasion in the skin or mucous membrane; tetanus usually follows in from two to twenty days after the germ is introduced. The reason for the variable length is, first, the number of germs introduced; second, the advantages given the germ. It may follow castration, tail docking, etc. I have seen it follow the operation of umbilical hernia in a colt. Intestinal parasites may also be mentioned as a cause. After the micro-organism gains entrance to a wound the heat and moisture as I have already mentioned arouses it to increased action. As the germ itself remains near the seat of introduction it is now believed that the product of the germ or ptomaine, as it is properly called, is the cause of the disease, inasmuch as these ptomaines are taken into the circulation and in some way poison the blood, this in turn so affects the nervous system as to cause rigidity of the muscles as characteristic of the disease.

The idiopathic is caused by exposure to cold rains, or extreme heat, it may follow a mild case of sun-stroke. I have seen a case of trismus brought on by animal being overworked on a hot day; this case recovered entirely within three days.

I do not think it necessary to take up valuable time in giving the semiology of this disease, for I do not consider it a difficult disease to diagnose after an ordinary examination.

The prognosis of the traumatic form is usually unfavorable, if the attack is very mild we may say the animal has even chances. The idiopathic form nearly always terminates favorably. When death takes place in either form it usually occurs in from two to ten days, either by complications of the pulmonary apparatus or from nervous exhaustion brought on by continual muscular rigidity or from hyperpyrexia associated with an elevation of temperature to such a degree that the organic functions of the heart and lungs are involved and finally cease.

Prof. Williams says that in post-mortems performed on animals which have died from traumatic tetanus he invariably found the nerves leading from the injured parts to present signs of inflammation, the neurolemma is more vascular than normal, the vessels of the spinal cord are engorged and the sub-arachnoid space contained effusion.

I will now say a few words about the treatment of this disease. In regards to this I have nothing new to offer. These cases are usually well advanced before we are called, at least I have found it that way. I have tried several different courses of

treatment without the desired result. I have had some get well, but I can't say it was due to the treatment, as I have tried the same remedies on other cases that terminated fatally. Perhaps those that did recover would have done so if they had received no treatment. There is a treatment advanced which is claimed acts like magic. It is as follows: inject into the veins of the affected animal the blood serum obtained from a recently recovered case; this is said to destroy the virus. To do this however, we would have to have a recently recovered case on hand all the time. This treatment consequently is not practical. Some claim to have an infallible remedy for this disease which they keep for their own use. I dare say they have not, but when this kind of a drug or combination of drugs is found I shall be pleased to hear it, and I am sure it will be a welcome addition to veterinary science.

It was followed by an animated and lengthy discussion, which was confined principally on the etiology of the disease. The following gentlemen participated in the discussion: Drs. Spencer, Jr., Whittlesey, Archibald, Orvis, Fox and Pierce.

Dr. Forrest was called upon to read a paper on "Springhalt." The essayist without going into the pathology of the disease, described a case which he had treated, and in which he performed a cure by performing the operation known as peroneo-prephalangeal tenotomy.

On motion by Dr. Whittlesey a vote of thanks was tendered the essayists for the able and masterly manner in which they had entertained the meeting.

Dr. Twombly was requested to give an account of a few experiments he had made with tuberculin, in Utah, a request which he cheerfully complied with.

The Secretary proposed the name of J. H. Edmons of Los Angeles for membership; the name was referred to the Board of Examiners.

The Secretary presented a communication from the Secretary of the United States Veterinary Medical Association, regarding the possibility of having some representation at the next meeting of the National Organization.

There being no further business to come before the meeting it adjourned to meet in San Francisco, September 12, 1894.

R. A. ARCHIBALD, D.V.S., *Sec.*

OBITUARY.

EVERETT W. ROWLAND, D.V.S.

It is once again our sad duty to record the death in the ranks of the Alumni Association of the American Veterinary College, from that terrible disease Phthisis. Dr. E. W. Rowland, of the class of 1882, died recently in Denver, Col.

SUNDRY NEWS.

TUBERCULOSIS IN SHORT-HORNS.—It is said that as a sequel of the application of the stamping out of pleuro-pneumonia, the sanitary authorities have discovered the serious fact that the number of tuberculous cows in the dairies of Edinburg was of 22%, and in those of London 12%.

VETERINARY ORGANIZATION IN TURKEY.—A veterinary service has been organized by the Sultan's order. Candidates must be Ottomans, and hold a diploma delivered by one of the Turkish veterinary schools. Ottomans having a foreign diploma must be submitted to an examination. Foreign veterinarians may be admitted to practice but must also submit themselves to an examination. Civil veterinarians are divided in four classes, and receive various salaries. There are ten veterinary inspectors for the sanitary service of the frontiers.

ADMISSION IN GERMAN VETERINARY SCHOOLS.—The German Veterinary *Council*, representing all the veterinary societies of the Empire, some 2,000 veterinarians, have petitioned the Chancellor of Germany to obtain that students shall not be admitted in veterinary colleges unless having received the degrees which are required to allow matriculation in the universities of the Empire. France and Belgium have already those requirements; a diploma of bachelor is required in those countries.—*Rev. Vet.*

GLANDERS IN CUBA.—This disease is reported prevailing extensively in that Spanish island. The first case of contagion to man is reported in 1870, but since it is said 30 or 40 persons died yearly.

A COMMISSION FOR INVESTIGATING TUBERCULOSIS AMONG CATTLE.—A bill has been introduced into the New York Senate providing for a further inquiry into the existence of tuberculosis. The wide prevalence of consumption in cattle has been a question of much concern to the State Board of Health, and last year the board's inspectors killed over twenty thousand head of cattle which were afflicted with the disease, and for which claims aggregating thousands of dollars are being filed daily by the State Board of Claims. The new bill provides for a commission to consist of one member of the State Board of Health, to be designated by said board; three breeders of thoroughbred cattle, each engaged in the breeding of a separate and distinct breed, to be selected by the directors of the New York State Dairymen's Association, and Prof. James Law, Professor of Veterinary Medicine in Cornell University. The commission is to have all the power now granted to the State Board of Health to examine the cattle of the state for the disease known as tuberculosis, and to examine into that disease, its existence, and any other facts concerning it that may now or hereafter be brought forth, and report the same to the Senate by January 15, 1895, setting forth all work done and all experiments made, and such suggestions for the proper continuation of the work as will tend to remove the disease from the cattle of the state. Fifteen thousand dollars is appropriated for the expenses of the commission.—*Medical Record*.

CORRESPONDENCE.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

DR. A. LIAUTARD:—

My Dear Doctor:—In reply to your recent favor inquiring about the program of our meeting in September next at Philadelphia, I would state that the subject of "Tuberculosis" will

again be considered, and particularly upon the use of tuberculin as a diagnostic agent, and as to the methods of stamping out this disease, also many other points in connection with the diagnosis of the disease in the bovine species, which are of peculiar interest and importance at this time. There will be a paper by Dr. W. L. Williams, giving a brief description of the diseases that are prevalent in the Rocky Mountains with a description of the special characteristics that they assume in that location. There will be a paper by Dr. S. J. J. Harger on "Neurotomy as a practical operation." Dr. Olof Schwarzkopf will present his paper that he was unable to render at our Congress in October last. In addition to this, I have some three or four other papers in view which assures us of a program that will be of particular interest at this time.

Very truly yours,

W. HORACE HOSKINS,
President.

P. S.—The discussion of Dr. R. H. Harrison's paper on "A New Method of Treating Periodic Ophthalmia by Surgical Interference" will be discussed at this meeting, and might I not ask you to suggest someone who would give the matter consideration and be prepared to discuss the same?

W. H. H.

ASSISTANT WANTED.

A young man, of good moral character, bright, energetic, ambitious, preferably a graduate of the American Veterinary College. Must have had experience, in a mixed practice.

Address

ROSCOE R. BELL, D.V.S.,

Seventh Ave. and Union St., Brooklyn, N. Y.

PRACTICE FOR SALE.

I will sell my practice and complete outfit of instruments cheap. Waterloo is a fine city of 12,000 inhabitants, and only one other veterinarian. Good farming country and good pay. Object for selling, want to quit the business.

RUFUS W. FINLEY, M.D.C.

AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—*Committee on Colleges.*—Notwithstanding the fact that the Committee on Colleges, appointed by the United States Veterinary Medical Association, was called and held on the 14th of July, we were not provided with a report of the transactions of the meeting until the 28th, when our issue for the month of August was already delivered. This is our excuse for not giving to President Hoskins' kind communication an earlier publicity. To him we address our thanks for remembering that through the REVIEW the members of the profession can learn of the good beginning made by the committee at their first meeting.

Of the twelve or fifteen places of veterinary education in the *United States*, six had representatives at the meeting—Harvard, the New York College, the McKillip, United States, Pennsylvania University and the Kansas (by proxy) were represented.

The American, the Chicago, the Ohio, the National, the Detroit and others were absent.

We can account for the absence of representatives from the American which because of utter impossibility could not be represented even by its dean, and it is probable that the letters of excuses were presented from that school as from the others.

We publish below the minutes of the whole meeting as ad-

dressed to us by President Hoskins, and with them the recommendations offered by the new formed association of veterinary faculties, and a resolution passed at the Veterinary Association of the District of Columbia, all of which will, we are sure, point to the valuable work which is in store for the profession in a short time to come.

The recommendations adopted by the committee (why congress?) are in conformity to a great extent with a certain paper on veterinary education in Chicago which, on account of time, it is supposed, brought on so little discussion at the time. Lengthening of the course, proper matriculation examination, were endorsed. This last, however, not altogether in accord with the fact, as they exist, but in doing injustice to one school. The requirements at the American Veterinary College are the same as those at Harvard, and neither can be recommended yet as a standard, as we have every reason to believe that they will be altered and made more stringent at an early date—consequently cannot be endorsed.

Section 3d, on the preservation of matriculation examination papers for inspection, is an excellent suggestion, though we fear will be difficult to carry out and may prove a very delicate work.

Section 4th, on the uniform title, is laid on the table for further consideration. What a pity! Why?

We cannot help regretting that the committee has not seen fit to add a seventh section, one relating to the election of professorship. While it might not have been acted on at once, it would have given time to every member of the committee to think about it, and it is worth thinking.

But altogether the work done was of great value. Once for all we regret our forced absence, and fear that when the next meeting is called we will not have reached America on our way back home—yet we will try. And in looking for immense results from the committee and the new-formed association, we sincerely wish that they will remember that their origin is the *United States Veterinary Medical Association*, composed of active mem-

bers of the *United States Veterinary Profession*, who have in view her elevation as an *American* profession, and that as such they will assume a name and hold their meetings, as the *Association of Veterinary Faculties* of the UNITED STATES.

The proceedings received read as follows:—

Congress of Veterinary Colleges of North America, convened under the auspices of Committee on Congress of Colleges of the United States Veterinary Medical Association, held at the Genesee House, Buffalo, N. Y., Saturday, July 14, 1894.

The meeting was called to order at 12 noon, Dr. W. Horace Hoskins, Chairman of Committee, presiding.

The following members of the committee present: Drs. W. Horace Hoskins and A. W. Clement.

Delegates from colleges present: Harvard—Dr. Charles P. Lyman and Dr. F. H. Osgood; New York College—Drs. H. D. Gill and J. H. Huddleston; McKillup—Dr. Schwarzkopf; U. S. College (Washington)—Dr. C. Barnwell Robinson; University of Pennsylvania—Dr. J. W. Adams; and Kansas City College was represented by Dr. Hoskins as delegate, per instructions, from said school.

Dr. Nelson P. Hinkley, of Buffalo, was appointed by Chairman Hoskins to act on the committee in place of Dr. C. C. Lyford, absent.

The following recommendations were adopted by the Congress of Faculties:—

1. Length and Number of Sessions:—

That it is the sense of this meeting that hereafter all veterinary schools issuing diplomas shall require attendance on a course of instruction extending over three years of not less than six months each, the time to be counted from the commencement to the end of the actual instruction given in each year, exclusive of time devoted to final examinations, and that no diploma shall be issued to any candidate until he has complied with all such requirements.

2. Matriculation Examination:—

That the first four sections on page 405 of the Harvard announcement, under the head of admissions, be recommended for adoption. 1. That "each applicant will be required to read aloud a selected passage from ordinary English prose; 2. To write legibly and correctly an English composition of not less than 200 words; 3. To write English prose from dictation; and, 4. The simple and compound rules of arithmetic, including decimal fractions."

3. Preservation of Matriculation and Examination Papers:—

Moved that we recommend to the Committee of the United States Veterinary Medical Association that all colleges be instructed to retain and preserve, for the period of six months, all examination papers, and that they be open for inspection by any properly constituted board.

("The final examination in any subject, or division of a subject, of the course as given in the school.")

4. Uniform Title:—

That the further consideration of a uniform title be laid upon the table for future consideration. Amended, that this subject is not to be taken up for discussion until after six months' notice of that coming discussion has been given to all the schools.

5. Number of Veterinarians on Teaching Staff:—

That it is the sense of this congress that there should be at least four veterinarians attached to all veterinary schools issuing diplomas.

6. Association of Veterinary Faculties:—

For the purpose of encouraging a closer and better acquaintance among the members of such faculties, and offering to them a chance for an exchange of views regarding the better methods of education.

Moved that an association, to be known as the Association of Veterinary Faculties of North America, be organized here, and that temporary officers be elected to serve until the first regular meeting, which shall be held in Philadelphia, the third Monday in September, when permanent officers will be elected.

Dr. Charles P. Lyman was elected President pro tem. of this association, and Dr. Schwarzkopf, Secretary pro tem.

Recommendations Offered by Association of Veterinary Faculties.

1. Dr. Osgood moved that a committee be appointed to draw up a constitution and by-laws at the next meeting.

Committee elected—Dr. Schwarzkopf, Chairman; Drs. F. H. Osgood and J. W. Adams.

2. Moved by Dr. Gill, seconded by Dr. Adams, that the Committee on Constitution and By-Laws be instructed to draft and send a proper letter to the faculties, inviting them to attend the next meeting of the association, and stating the objects of the association.

3. Moved by Dr. Osgood, seconded by Dr. Robinson, that the committee appointed by the United States Veterinary Medical Association to convene this congress be invited to be present at the first meeting of the organization, in Philadelphia.

4. Moved by Dr. Osgood, that this body extend a vote of thanks to the Committee of the United States Veterinary Medical Association for their attendance here, and the work they have done in bringing about this congress.

5. Moved by Dr. Hoskins, representing the Kansas City Veterinary College, that this association asks at the hands of the United States Veterinary Medical Association an expression of opinion as to what disposition they would make of an applicant for admission who had elected on entering the college to take a three years' optional course in a two-year school, as to whether such candidate would be eligible to membership in that association?

At a meeting of the Veterinary Association of the District of Columbia, held on June 30, 1894, the following preamble and resolutions were unanimously adopted:—

Whereas, on account of the present and constantly increasing number of institutions teaching the science of veterinary medicine, and the marked tendency of many of them to require but a short and insufficient period of study and attendance, be it

Resolved, That a uniform standard of time and other requirements should be established and recognized. The term of attendance not to be less than five (5) months for three years. The requirements and branches to be taught should be decided upon by a board composed of one representative from the veterinary faculty of each institution wherein the science is taught.

Resolved, That should the foregoing seem impossible of conception, then, that a national board of examiners, composed of one delegate from each state veterinary society, should propound a number of examination questions to be changed yearly and to be used by the State Board of Examiners, who shall sit at a specific time and place to examine any graduate of veterinary medicine who may appear before them. Said board to be elected by the State Society.

Resolved, That the various state legislatures should be asked to co-operate with said boards of examination from said board of examiners. ACHESON, *Sec.*

On motion of Dr. Osgood the foregoing was received and spread upon the minutes.

PROFESSIONAL ETIQUETTE.—What an important subject. How broad a field it covers, and yet how simple it is, and under what narrow limits it could be bound. In the issue of this month our friend, Dr. Giffen, offers us a paper read before one of the meetings of the Veterinary Medical Association of the County of New York. The Doctor has done well, as all of us can see, but how concise he has been. His paper could have covered the entire issue of this month's REVIEW, and would yet have been concise. Deontology is a thing unknown, we might say, among veterinarians. Professional etiquette is, in many instances, only in the codes of ethics of the societies. But how far are they carried out?

In fact it is a question for us, how could it be otherwise? Are not those, from whom our young men could take example, themselves guilty of breach of ethics? And when we find this one or that one calling himself a V.S., D.V.S. or others alike, or qualifying himself as a graduate of this school or that college, or of that university, we are asking ourselves whether he is committing a breach of ethics more serious than Mr. Smith, who qualifies his card, the heading of his letter paper, or the corner of his envelope with his title of Professor of . . . Is the non-graduate, who tries to impose himself by an assumption of a title to which he has no claim and for which he can be prosecuted as being assumed—is he doing a more unprofessional act than he who advertises himself as an officer of this society or a member of that society. We think not, and when we bear in mind that the Committee on Colleges of the United States Veterinary Medical Association is going to take into considera-

tion matters of no little importance to the elevation of the veterinary profession, we think it will not be out of place in suggesting the subject of the creation of a chair of *Veterinary Deontology* as one of the most important. Younger men in the profession have almost an excuse for mistakes in complying with the requirements of a code of ethics of which they have heard nothing until they graduate. They are likely to drop in errors in following the doings of their predecessors, or their teachers, or perhaps of their alma mater.

Perhaps it will be thought hard for us to speak as we do, for after all this is not the only country where breaches of ethics are observed. English periodicals give us now and then articles of complaints of similar nature. No doubt the same state of affairs exists on the Continent; but across the Atlantic these may be excused—they are part of their organization, they exist since the birth of the veterinary profession over there, and on that account cannot be abolished readily. But here, where veterinary science is scarcely born, where it is young anyhow, it cannot be hard to do away with the tendency which shows itself, and, in fact, it can readily be gotten rid of if a good example is set by those to whom the younger generation is looking. Less humbug on this point will bring on wise imitation and better etiquette on the part of the others.

MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The issue of September has always been for us a good opportunity to remind veterinarians of this country of the anniversary meeting of the United States Veterinary Medical Association. In our last number we published a letter from the worthy president in relation to the meeting, which we had received previous to our vacation and before the official notice of the secretary was in our hands, and to which we may add the information that Dr. L. McLean of Brooklyn will read a paper on "Horse Shoeing."

Imperfect as our present remembrance is, let us call the attention of our readers to the fact that on the 3d Tuesday of this month, at Philadelphia, the anniversary of the United

States Veterinary Medical Association is to take place; that two days will be employed in the transaction of business, reading of papers, discussions, etc., and that the entire proceedings are to be under the guidance and hospitality of these good veterinarians, the Pennsylvanians. Every one who can must be there. Everyone will be there? And if any are prevented from being present we hope, if we are favored with copies of all the proceedings, to present these to our readers and show them what they have missed by being absent.

NEW YORK STATE VETERINARY SOCIETY.—This month also the annual meeting of this society will take place. Important papers are promised. The veterinarians of the Excelsior State are hard at work. No doubt it will be a good meeting also.

VAN SWIETEN SOLUTION.—In compliance with the desire of some of our readers who have expressed their wish to try this preparation as suggested in our July issue, for the treatment of suppurative articular diseases, we give here the mode of preparation for veterinary purposes, which differs but little from that used in human medicine. After all it is only a bichloride of mercury solution.

℞. Corrosive sublimate, 4 grammes (1 drachm).
Alcohol, 90 grammes (3 ounces).
Distilled water, 2½ liters (2½ quarts).

After pulverizing the bichloride, it is dissolved in the alcohol and the water added to it.

ORIGINAL ARTICLES.

PYOMETRA IN A CAT.

BY T. S. CULLEN, M.B., Assistant Resident Gynecologist,
The Johns Hopkins Hospital.

It has been thought advisable to publish this case on account of the apparent rarity of the affection, and also, because both cornua uteri reached such an immense size.

The cat from which the accompanying specimen was obtained was brought to the Pathological Laboratory of the Johns Hopkins University and the following history was given by the owner.

The animal's abdomen commenced to enlarge six years ago; the swelling gradually increased since then. She had no kittens during this period. Locomotion was difficult on account of the large abdomen. Her general health was said to be good and her appetite normal. One week before her death the umbilical girth was 70 cm. There was very little sagging in the flanks and on percussion a distinct wave of fluctuation could be elicited. The death was gradual, the animal in the last few days refusing to eat.

Autopsy by Prof. Welch.—On opening the abdomen it was found to be perfectly dry. The vagina just within the orifice was greatly constricted, not admitting the finest probe. Above this it was slightly dilated. Both uterine cornua were enormously dilated throughout their entire length resembling sausages in their contour. The length of each was 45 cm. and the maximum diameter 25 cm. Each presented three constrictions with corresponding bulgings. Both passed outward, upward and then downward and inward.

They were smooth and glistening and of a pinkish color. On their anterior and posterior surfaces, however, near their origin were large areas covered by whitish nodules varying in size from a pin's head to 2 mm. in diameter. These were not surrounded by any inflammatory zone. Similar nodules were present along the lines of constriction. Numerous branching blood vessels were seen coursing over the walls of the cornua. Shining through the walls, especially over the middle portions of the cornua, were many small irregular dark red patches, resembling ecchymoses. The cornua together contained 2600 cc. of a thin, dirty, greyish white pus. This had no odor, contained many large cells filled with fat droplets, polynuclear leucocytes, detritus and myriads of short bacilli with rounded ends. These bacilli were half as long again as broad and closely resembled the colon bacillus in form. Cultures from the pus were negative.



The inner walls of the cornua were smooth and glistening but there were slightly raised areas, corresponding to the dark ecchymotic spots seen externally. Both tubes and ovaries were apparently normal. Nothing further of note was to be seen in the abdominal or the thoracic organs.

Histological examination.—The vaginal mucosa is everywhere intact and appears to be normal. Just beneath the epithelium there are isolated patches in which the connective tissue cells had undergone considerable proliferation.

The cornua are covered externally by flat epithelium, this becomes cuboidal in the vicinity of the white nodules above described. These nodules are composed entirely of connective tissue moderately rich in cells, having irregular triangular nuclei. The nodules have a very scanty blood supply and are intimately adherent to the uterine walls. The muscular coat shows here and there small aggregations of connective tissue cells.

The mucous membrane in some places is represented by one layer of cylindrical epithelium, in other parts by a few round glands, and corresponding to the dark patches hæmorrhages had taken place in the stroma of the mucosa. The surface epithelium over such areas is raised from the stroma by the blood but is everywhere intact.

One might at first sight be inclined to think that there was atrophy of the mucosa but taking into consideration the extreme distention of the uterus there was probably no atrophy.

Sections from the bladder, tubes, ovaries and liver showed the structures to be normal.

The exact cause of the condition in this case cannot be stated positively, but the constriction near the vaginal outlet may have been the exciting factor. It is interesting to note the slight alteration that has occurred in the vaginal and also in the uterine walls, there being apparently only little increase in the connective tissue elements. The fibrous nodules have probably been produced by a mild peritonitis set up by the cornua rubbing against neighboring structures.

The fact that the surfaces of the cornua on either side of the

constrictions were covered by these small nodules, as above mentioned, also seems to indicate that these nodules were caused by friction of the opposing surfaces on each other.

Description of Plate.—The view is from the posterior. It shows the narrowed vagina, the bladder, and the dilated left uterine cornua. Only the commencement of the dilated right cornua is seen. The left tube and ovary are also visible.

The small nodules are seen at the commencement of the right cornua.

ACUTE INDIGESTION.

BY DR. J. W. IRELAND, Quincy, Ill.

A paper read before the Illinois State Veterinary Medical Association.

In the long list of sporadic diseases, there is probably none of more importance to the veterinary practitioner than that of acute indigestion.

It attacks all classes of horses, but more especially those of the heavier breed and in the prime of life.

From the fact of the suddenness of attack, and the danger of a fatal termination in a few hours, and in some cases minutes, the practitioner should at all times be prepared to apply proper remedies on short notice, both medicinal and mechanical.

No disease presents a better field for a veterinary surgeon to distinguish himself than in the treatment of acute indigestion in the horse and mule.

So sudden is the attack and violent the symptoms that relief given in a few minutes by the use of trocar and medicinal agents proves a veritable boon to the veterinary in charge in particular, and the profession in general.

You do not have to argue that the disease must run a definite course and that we must wait for nature, and assist it as best we can, but we apply remedies that by their chemical action arrest the process of putrefaction and relieve the spasms and irritation that has resulted therefrom.

The causes and symptoms are so well known to all that a passing mention of a few of the most important is all that is necessary. While the most common cause of fermentation of food in the stomach is over-feeding with grain, followed by severe exercise, yet some of the most rapidly fatal cases are caused by wet bran and green clover, thus proving the necessity of admixture of saliva during mastication, and that the first process of digestion must take place in the mouth before it can be continued in the stomach.

The fallacy of giving hot bran mash after parturition has been proven over and over again by fatal attacks of gastric flatulency. A very good proof of the non-admixture of saliva being a cause of acute indigestion is given in the fact that green clover if eaten while wet with dew or frost is more apt to cause it than when dry. It also proves that moisture favors fermentation and putrefaction, and that the horse does best when fed upon dry food and allowed to do their own grinding, which they were intended by nature to do. The closer we study *dame Nature*, and allow her to dictate the course to be pursued, the nearer we will be right.

Allowing an animal to drink large quantities of water directly after meals may cause indigestion by diluting the digestive fluids and temporarily diminishing the amount of blood to the stomach and bowels. I think, however, that a small amount of water assists rather than retards digestion by facilitating absorption of that which is already digested.

In the symptoms only a few things may be noted. In the very early stages it might be mistaken for spasmodic colic. By placing the ear to the *œsophagus* at its entrance to the thorax, a rumbling or gurgling sound will often be heard, caused by the stomach forcing the gases into the *œsophagus* and being returned to the stomach by the resistance of the *œsophagus* to vomition. The animal does not throw himself down so violently as in colic, nor are the pains so intermittent.

In drenching it will be noticed that they offer greater resistance than in colic, holding the lips and tongue more rigid, know-

ing as they do that the drench will enter the stomach with difficulty and cause much pain. It is only by the inexperienced that any mistake in diagnosis is likely to be made, and to him the unmistakable signs of the disease soon present themselves.

As to the eructuations of gases and the regurgitation of food being unfavorable symptoms, there seems to be a difference of opinion. I think they are favorable rather than otherwise, and depend more upon the anatomical structure of the œsophagus after passing through the diaphragm than indicating any particular lesion of the disease. For we all know that in some cases we have frequent eructuations of gas when it is quite apparent that the stomach is not distended to any great extent, judging from the actions of the horse.

The continuance of labored breathing after the use of the trocar and cannula is a symptom always to be feared if it continues for any length of time, and is accompanied with trembling of the muscles of the flank and shoulders.

While a thorough knowledge of the causes and symptoms are very necessary, the treatment is by far the most important. The treatment recommended by old writers, and some of the present day, are erroneous and not consistent with sound reasoning. I am of the opinion that such remedies as oil of turpentine, ammonia, and linseed or castor oil should not in any case be given. Diffusible stimulants of any kind in the first stages are contra-indicated. The most efficient antiseptics, antispasmodics and sedatives, in conjunction with the judicious use of trocar and cannula are, in my opinion, the proper treatment. Enemas per rectum in the first stages do more harm than good and should not be used till the fermentation is arrested and excitement of the bowels modified.

The use of eserine or other drastic purgatives, calculated to act upon the bowels during the period of excitement must increase the spasms and do much harm,

As to the use of the trocar and cannula, I think all are agreed that it is of great value. The principal difference of opinion being the time to use it. Some advocate its use only

as a *dernier ressort*, while others claim its use only to be of value before the bowels become fully distended. While I by all means prefer the latter course, yet we must not be too hasty.

Just to what extent the bowels should be allowed to fill before puncturing is hard to indicate, but suffice it to say that the surgeon in charge must use his own judgment, and in no case run risk of rupture, or even severe tension of the bowels.

To have the trocar and cannula in a thoroughly aseptic condition cannot be too strongly recommended.

My experience has been that the right side should always be chosen to puncture, and that no incision is necessary in the horse or mule, but that the part should always be eased with carbolized ointment to facilitate the entrance of trocar as well as the withdrawal of cannula. If gases are being generated very fast the cannula should be allowed to remain in for twenty minutes or half hour. This I think being preferable to puncturing so often.

As to the antiseptics to be used, I think salicylic acid stands at the head. Not only does it arrest fermentation of food in the stomach and bowels, but when absorbed counteracts the poisonous effects of the gases absorbed and is non-irritating.

As an antispasmodic morphine hypodermically, and as a sedative tincture of aconite, sodium sulphite, boracic acid and bicarbonate of soda have all been used with some degree of success.

In indigestion, as in colic, most every practitioner has his own favorite remedy, and if he has been successful should continue its use.

To sum up the treatment in a few words I would say, that we must ever bear in mind a few things. First, the fermentation of food; second, the tendency to inflammation, and third, the danger of rupture of stomach or bowels. Surely, then, we must not give irritating antiseptics and diffusible stimulants to promote inflammation, and must not too long delay the use of trocar and run risk of rupture either partial or complete.

My experience has been that peritonitis is more common than muco-enteritis following indigestion, and usually the result of rupture of the serous coat or extreme tension thereof.

How often we are called in at an advanced stage of the disease. The bowels and stomach are distended to an enormous extent. The trocar is used and partial relief is given, but symptoms of peritonitis remain, and in a few hours the animal succumbs, post-mortem revealing rupture of peritoneum, followed by peritonitis and death.

Having had no experience with the use of stomach-pump, or passing of probang or other hollow tube, either by mouth or per rectum, I will refrain from comment, hoping to get the experience of several present.

Acute indigestion, as a rule, is very satisfactory to treat, yet we meet with cases that seem to be doomed from the very start, and in spite of all we can do the animal succumbs in the unequal contest, and another is added to the already long list of failures to save. Yet all such cases serve a purpose. They tell us that our remedies are not all-efficient, and that we must cast about for some greater antiseptics, and that the science of medicine, as known to-day, is far from being perfect, and that the field for research is vast, and that great things may yet be achieved if we but apply ourselves diligently to the task.

PROFESSIONAL ETIQUETTE.

A paper read before the Veterinary Medical Association of the County of New York.

BY THOS. GIFFEN, M.R.C.V.S., New York City.

A desire to avoid repetition in this paper of many matters which have heretofore been presented, more or less elaborately, to various veterinary associations by essayists who have given the subject of professional etiquette their attention, will, I fear, compel me to be very brief. Brevity, it has been said, is the soul of wit, and if in even a brief treatment of the subject I bring

under your notice a few matters which are worthy of the earnest consideration of my fellow professionals I will have succeeded in giving to my words a soul which will enable them to live later in your thoughts.

Etiquette, socially speaking, may be regarded as a standard set up by time and experience to direct the individual to the path of accepted propriety. There will at all times arise differences of opinion as to what is propriety in social affairs, there being many cases to be decided which are governed by absolutely new conditions and which can only be decided according to a sense of individual propriety. Writers on etiquette have arbitrarily prescribed rules of conduct for society in general, and, although disagreeing in respect to various particulars, they have kept steadily in sight the necessity of upholding a standard for general adoption. I do not think it requires to be argued in order to convince us that society, as well as the individual, needs to protect itself in some way against the freaks of the thoughtless, the vagaries of the audacious and the pretensions of the insolent. The instances are numerous which I might cite in support of this. Nor is there anything incompatible with the spirit of equality in the assertion of a necessity for the existence of such a recognized standard; it is simply an acknowledgment of a right inherent in every individual, a right which concerns his liberty and happiness.

It is none the less true that members of professions find it just as necessary to have an understanding with their fellow practitioners as to matters regarding which there is much opportunity for—and actually is—conflict. Only by a due conformity to that which, written or unwritten, is recognized as professional etiquette can complications between fellow professionals be prevented. The necessity for inculcating the adoption of well defined methods in professional life is apparent to every member of the veterinarian body who has had a mature experience in the practice of his profession. There are many matters of frequent occurrence in the exercise of his duties which bring the veterinarian face to face with difficulties that would be entirely avoided

were there an observance of a strict rule of etiquette between the members of the veterinary profession.

How then, and in regard to what, may a well devised scheme be brought before the attention of veterinarians to the end that the profession may be improved, the practice harmonized, and uniformity prevail in business methods? This is a question which is well worthy the consideration of the entire veterinarian body, and it raises matters of such moment to the profession as entitle it to be answered by them collectively.

Rules or laws there may be, which, in the daily evolution of society, will fail to carry with them general obedience because they encroach on the ideas of propriety which many individuals hold. In essential things, however, there is a universal sentiment which acquires the force of law. Community of interests and a vigilant regard for professional reputation constitute good ground upon which veterinarians (also those engaged in other professions) can come together and settle upon something to be mutually honored by them and which will have the force and effect of recognized law. A great deal may be left to the members of the profession individually as to the way in which the honor and dignity of the profession may be upheld. The honor of the profession should be dear to all veterinarians, and a proper recognition of this will necessarily involve their acting at all times in accordance with the canons of courtesy and refinement. It is no portion of my present task to point out any special path by which veterinarians may best safeguard the honor and dignity of the profession, for I believe that among all reputable veterinarians there is a strong *esprit de corps* and that their public acts will tend to raise rather than lower the profession. Unfortunately, however, there can be found in every country members of the veterinarian body who are not at all solicitous about professional honor and who show for it an indifference which is quite on a level with their unscrupulous business methods.

One of the difficulties to which I have before alluded is an irregular method of charging for services rendered to clients.

When the impression gets abroad that there are several scales of fees among veterinary surgeons for the same class of service, the effect this gives rise to is an unhealthy one for the profession generally. Surely an understanding may be easily arrived at on this point and something be accomplished in the direction of establishing uniform fees in such cases. Continuance of this irregularity must eventually lead to a state of affairs highly demoralizing to the profession and well worthy of being described as "levelling down." There is enough of common interest here to spur on all who have the future interest of the veterinary profession at heart to take action towards the adoption of a uniform system of charges. I have known instances of practitioners agreeing to perform an operation for a low fee simply to obtain a case, when there was not the slightest occasion to make any reduction whatever. Still a client, however willing to pay proper fees, will not fail to take advantage of precedents thus set, when he finds it necessary on a subsequent occasion to bring in veterinary assistance.

Perhaps the most important matter on which veterinarians should come to an agreement as to the course to be pursued towards one another when there is a change of practitioner. There is undoubtedly great room for a well defined policy in these cases. The laxity of many veterinary surgeons in this regard is much to be deplored. I cannot conceive of any relation between veterinarians of such delicacy as this. Failure to live up to rigid professional etiquette must certainly have in the long run a most hurtful effect on all practitioners. It becomes very important, therefore, for veterinarians to lay down a course for their common guidance, commended alike by sound sense and propriety.

While I do not for a moment question the right of owners of animals to change the practitioner; yet there should be some check to those exhibitions of impatience that are sometimes capriciously indulged in when a horse is being treated. Moreover, the interests of the animal demand it. Practitioners who are called in second-hand should insist on a consultation with

their predecessor, and before taking the case in hand they should have a clear understanding that the client has entirely dispensed with the services of the first practitioner. In fact, veterinarians should be very reluctant to replace a brother practitioner when the change is due to mere caprice. The client should be shown that the principle involved is regarded as of greater importance than the securing of a fresh fee or a new case.

When a change occurs the incoming practitioner should be particular to avoid criticism of his brother veterinarian who had first charge. He should not lend his approval to disparaging remarks, more than likely ill-founded, that may be made regarding the preceding mode of treating the case. To act in this way betrays very poor judgment. Veterinarians know how unjust these criticisms usually are, and that often they are directed against a well trained and highly qualified practitioner. A reaction is sure to follow any such encouragement of hostile comment on a fellow professional, and in the interest of the profession such a course is to be deprecated. Whether such style of comment is made to simply chime in with the fault-finding of a client or his representative, or whether it is due to a more malicious purpose, it lowers in public esteem the value of veterinary science.

It must be said that there are some instances of professional rudeness that almost seem incredible. I have in mind a case in which a veterinary surgeon was called in where another one had preceded him. The new-comer without informing himself regarding the treatment adopted by his predecessor began work by smelling a bottle which he found convenient, afterwards breaking it, and exclaiming that he could have saved the life of the horse but for the way the other practitioner had treated the case.

I have also known a case in which a veterinarian, brought in secondly, took the balls which his predecessor had ordered and threw them out of the window. An instance is also within my experience where two veterinarians were attending at the same stable to treat their respective horses, and one of them was in

the habit of going up to the horse which his brother was treating and saying to those who were in charge of the animal that unless there was a change of treatment the beast was sure to die. This sort of conduct is highly reprehensible, and its effects reach far beyond the practitioner who is thus assailed in his absence. Such cases degrade the profession.

I do not pretend that there should be perfect unanimity among veterinarians in all things. For instance, I do not expect that they will agree when called upon to give expert testimony; but their relations to one another in essential matters of practice should be better understood. It is reasonable to expect from them a common action in regard to those matters which affect the elevation of the profession and the extension of the influence of the veterinarians.

The value of organization needs to be much better appreciated by the veterinary profession. There is nothing to which the learned professions owe more to-day than that interchange of views which comes from personal intercourse with fellow professionals and the general educational influences of societies. All veterinarians who look to the higher development of their profession should become connected with the veterinary associations of their localities. Here they will put themselves in the way of the advantages which accrue from organization. It is by meeting one's fellow-workers in any given field that a man acquires an enlargement of scope which is destructive of petty jealousy and productive of broader views. The great work done in other countries to break down professional jealousy is mainly to be attributed to healthy organization. When men know each other they will learn to differ amicably and bury their little bickerings. Let everything be done to strengthen the relations between veterinarians. Let them avail themselves of the opportunity to improve their status as veterinarians. The three years' system will give us a well equipped acquisition of new blood, and older brethren must be up and doing that they may not lag behind. They cannot do better than keep in touch with their fellows on all matters of etiquette and instruction. Veterinary

societies will prove to them both interesting and profitable institutions.

I have endeavored in this paper to draw your attention to some matters which I trust will be deemed worthy of earnest consideration, and in concluding I desire to express the hope that the importance of veterinarians cultivating improved methods of professional practice will be speedily realized.

THE PRINCIPLES OF ANTISEPSIS IN THE TREATMENT OF ECZEMA.

BY PHILLIP HESELTINE, V.D., V.S., Rochester, N. Y.

While it is true that the antiseptic system has won general recognition, and has become an integral part of the practice of the majority of veterinarians all over the world, it seems to me that the time has not yet arrived for its advocates to feel that their work is done. There still exists a tendency, partly due to the scepticism expressed by a few leading specialists, in both professions, who regard it as a cumbersome method of attaining mere cleanliness, which alone is declared to be the conditions on which the best results can be secured. And by many surgeons and veterinarians the whole thing is looked upon as a fashion, to which they conform in a perfunctory manner, without any profound conviction of its value. Others, again, believe in the principle, but think the methods are in transition state, and that much is yet to be done before they can be fully accepted. I regret to say that I know some veterinarians who still practice surgery without any antiseptic precautions whatever. Where the only claim of the antiseptic system is that it insured or hastened the healing of wounds, or that it rendered operative interference safer, or that it prevented suffering on the part of the patient; on any one of these grounds it would deserve the favorable consideration of all veterinarians, and its acceptance would be an imperative duty. But it appears to me that it does more than all this, for I know of many cases in which it is the direct means of

preserving life; without it a fatal issue would be inevitable. For instance, an operation upon brain-tissue, or those involving exposure of a knee-joint, or those of the gamble-joint, or in operations upon the foot, not only should every precaution be taken against probable sources of contagion, but every possible source should be excluded; hence the chance of air contagion should be duly considered, and should be provided against by removing from the operating room all dust-holding fabrics, taking care to have the floor and operating table thoroughly cleaned and damp by bichloride solution, one part to five parts, immediately before operating and in many cases it is advisable to keep the doors and windows closed from the beginning to the end of the operation. It should be the aim of all veterinarians to reserve as soon as possible an operating room exclusively for all operations. But in dermatology, although the object of its study and its therapeutic actions, the outer integument of the horse's body, is constantly in its entirety exposed to all the dangers of microbe infection, comparatively little has been written in veterinary science of antiseptics. It is true, if we look over the list of remedies generally employed by the veterinarian in the treatment of diseases of the skin, we shall find a large number of drugs the action of which is decidedly an antiseptic one, be it that they have been introduced or discovered only since the antiseptic era, on this very account be it that they had been in use long before, and only on later investigation were found to have antiseptic properties. If thus the veterinarians are actually applying antiseptic treatment, it is apparently often done unconsciously and unintentionally without a proof that they realize the presence of conditions which require antiseptic measures, and without either a clear understanding of the meaning of their therapeutic action itself or the distinct expression of their intentions. Still I believe that a certain lack of pronounced general principles in treatment is one of the obstacles to simplification of dermatological therapeutics and one of the causes favoring the publication in the veterinary journals of the numerous "useful" formulæ for prescriptions against skin diseases. This can be said

with particular force of eczema in the horse, the most important and most frequent among the diseases of the skin. It therefore seemed to be of sufficient interest to briefly consider the conditions in eczema which invite or require the application of antiseptic principles, to inquire into the reasons why this application has not been made in practice and to define the best methods for the same. In approaching the first of these questions, the much debated etiology of eczema can be entirely left out of consideration. It does not make the slightest difference for our position whether eczema is always or in a number of cases a parasitic disease, or whether it owes its origin to nervous or tropic influences or only to external irritation. Among the various opinions prevailing among different schools in regard to its courses it is almost universally acknowledged that, anatomically, eczema is a catarrh, a superficial inflammation of the skin, not extending deeper than into the papillary stratum of the cutis proper. In the majority of the cases corneous layers of the epidermis become detached from the rete Malpighi by a serous exudation either in the shape of vesicles or over a large and more irregularly defined surface, in either instance the thin cover is more or less rapidly carried off by mechanical means and the reddened, moist rete is largely exposed. Experience teaches that the intact corneous layer of the epidermis furnishes ample protection against the entrance through the skin of pathogenic microbes into the lymph and blood circulation, and that the slightest break in its continuity opens a door to infection, not only with the violent elements of suppuration and sepsis, but also with those of syphilis, tuberculosis, scrofula, etc. It is evident, then, that the conditions in eczema referred to above afford the most favorable opportunity for the many microbes with which our atmosphere and our stables, hospitals or infirmaries, is charged. In fact, it has been shown that microbes, pathogenic and apparently non-pathogenic, are constantly found in large numbers and varieties on the skin, so that it seems almost impossible that a portion of the surface deprived of the cover of the epidermis would remain uninfected even for a moment. The

formation of crusts by the drying up of the secretions over some parts or over the entire denuded surface largely increases the danger by giving a certain protection to the growing and multiplying microbes against external injuries, and favors the resorption of poisonous substances. In other cases the contents of the vesicles rapidly become purulent, which are formed by the serous discharge, yellowish or brown crusts cover the surface particularly where the great thickness of hair favors the undisturbed drying of the secretions. It matters not for our purpose whether suppuration is considered an essential feature of eczema or whether the pustules of impetigenous eczema are included in the eczematous process or whether we should consider suppuration as a secondary infection. With our present knowledge we must assume either way that an infection with pus forming microbes has taken place, that conditions similar to those of a suppurating wound or of a suppurating mucous membrane are present. I myself am inclined to believe that suppuration, the so-called stage of eczema impetiginosum, makes its appearance only when local septic infection complicates the moist stage. My experience teaches me that when such an event does not take place the vesicular, or moist eczema, passes immediately into the squamous stage. When the exudation on the surface is not present or in so moderate a degree that no moist surface is presented the excoriations resulting from scratching afford an equally commodious entrance to all kind of septic material, and in their turn often actually become the seat of more or less deeply seated suppuration. Besides in many cases and by closer inspection and a slight effort to remove the scales will reveal the presence of smaller or more extended surface, the scales often preventing the oozing out of the secretions and greatly favoring absorption of septic substances into the lymph system. In other cases, with more infiltration of the cutis and considerable accumulation of horny scales, the formation of cracks will represent another condition apt to become the seat of septic and other infections and in many cases the formation of ulcers, simple or specific. My experience is, as long as suppuration ex-

ists a cure is apparently out of the question. This, I believe, will not be denied even by those who consider eczema as almost a constitutional disease produced by some irregularities in the function of some organ or viscera, or the result of the general condition of many of our stables, and who, as a rule, look to internal or constitutional treatment as the most important part of therapeutics. It would be but natural under these circumstances to apply the same method which we see doing good service in the hands of the surgeons. I do not doubt this often has been done, but in most instances with disappointing results. Due to the extreme heavy coat of hair and negligence by the attendance, we find it is impossible to adopt antiseptics by the same method as the dermatologists and with equally as satisfactory results. While our results may not be equally as satisfactory, we can much improve by a more careful observation on the principles of antiseptics and of the treatment of the past. In the early times antiseptic practice was almost identified with the employment of carbolic acid. Unfortunately this valuable remedy is not very congenial, even to the healthy skin, this is proven not only by the common experience that carbolic acid dressing after a short time is liable to produce inflammation of the skin surrounding the wounds, but by the rather popular use which carbolic acid has found against all kinds of lesions and ailments. I have found but very few cases where carbolic acid was of any benefit in treating diseases of the skin, and I feel convinced that I have treated more cases which had been directly aggravated by its use. Other drugs have taken the place of carbolic acid in the treatment of diseases of the skin and general surgery, but almost invariably has the effect been equally disastrous, particularly with *hydrargyri chloridum corrosivum*. Quoting the language of H. G. Klotz, M.D., New York, who says it is a well known fact that all antiseptic drugs act much more powerfully in solutions than in combination with oils, grease and other constituents of ointments. To introduce antiseptic treatment by the use of water, poultices, and various antiseptics in solution my experience teaches me that it would be very disagreeable

and unsatisfactory even in the hands of the most skilful, while we find that we have to leave the treatment in the majority of cases in the hands of the attendants, who not attaining any knowledge of the principles of antiseptis can scarcely be considered responsible for not fulfilling the direction which he receives from the veterinarian. It can easily be seen why so many mistakes are made and the treatment of eczema so unsuccessful in our patients; after a time the patient is returned and the services and treatment of the veterinarian are rendered fruitless through neglect of the owner, placing the responsibility on the veterinarian (who is considered to be always making blunders); so it appears plainly to me the veterinarian cannot be too strict at all times in giving directions and endeavoring to see they are properly carried out, and I believe in the majority of cases the veterinarian should attend to the treatment himself. Coming to the most practical part of my paper, I will first note as to the careful regulation of the diet; strong food of all kinds should always be forbidden. The digestive tract should be carefully looked after to see that the evacuations, depurations of the liver, bowels, kidneys, are encouraged. These principles, however, should not be of a cast-iron character, but should be modified to suit the patient. I do not believe that there is any one method which would be of a specific character, which could be adopted as a treatment for eczema; it is the eczema patient that is to be treated not only according to the kind of eczema but likewise the diathetic condition of the patient. The veterinarian that treats eczema with the best results is he who analyzes with the utmost solicitude and attention the situation, surroundings, and the daily requirements of his patients and who understands how to rectify the hygienic conditions and re-establish all which he should find to be defective in organs or functions. Among internal medicines useful in eczema, alkalies are to be employed in a large number of cases and in all stages of eczema; especially in strong vigorous horses, arsenic, particularly in the form of arsenious acid may be employed in the more advanced stage of eczema as a modifier of the epithelium function. In many cases

where I have given arsenic by the mouth and have obtained very unsatisfactory results, I have used it hypodermically, commencing at a quarter grain and increasing in a few days to a grain or more with splendid satisfactory results; not giving more than two hypodermics per day commencing to the local treatment of eczema after having suppressed all external irritation, having cleansed the diseased parts, etc., then one's duty is fulfilled, having placed the affected parts in the most favorable position for treatment. There are two principle modes of dressing which I adopt, each one has its use, according to circumstances and locality and they may be used successively or alternately. First styptic colloid, a mixture containing tannic acid dissolved in ether and collodion, which affords great relief and can be applied with a soft brush; it forms a loose scale which mingles with the cutaneous scales, and exudation; it causes no irritation and should be repeated once or twice daily or alternately with the following, taking care to have the parts thoroughly cleansed by castile soap and luke warm water containing half ounce of boracic acid to the quart.

Rx.	Acidi Salicylici	3 ij
	Resorcini	
	Pulv. Zinci Oxidi	aa 3 jii
	Pulv. Amyli	3 ij
	Lanolini	3 jv
	Acidi Boracici	3 j
	Vaselini	q. s. ad 3 viij—M

Sig. Apply twice daily or alternately with the styptic colloid.

DENTITION DISEASES.

BY DR. I. B. NEWBY, Peoria, Ill.

A paper read before the Illinois Veterinary Medical Association.

In offering these few for your criticism, perchance they may appear as if no one had seen or done any dentistry but myself; far from it. In the Book of books you find this passage, "And if

any man think he knoweth a thing, he knoweth nothing yet as he ought to know;" and any of us who has had much practice, and, in fact, the longer we practice the more we find this Scriptural passage to be an infallible axiom, and if any man in the profession to-day has made more mistakes than I he should be in durance vile or wearing the stripes instead of being at large. But as I happen to know many so-called V. S., who are constantly making irreparable mistakes without any attempt at being scientifically informed or educated, and with whom I have small sympathy, that to-day I came before you, my professional brethren, if my experience related here points you to a danger signal, don't go that way, as Sir William Gull replied, when asked if he did not consider animal experiments cruel: he considered no cruelty compared with that of the cruelty of ignorance.

Therefore, let us consider together a few of the more common diseases of the teeth, laying aside all theory as far as possible. The ones I most commonly meet with are caries, pulpitis, pericementitis, alveolar abscess, traumatic inflammation of tooth and its accessories, with cysts, etc., in sinuses, gangrene of turbinated with complications and such as ophthalmia, dental cough, constitutional disorders, etc. Frey has well said that tooth development is one of the most difficult tasks that embryologists have to contend with. He should also have said that no organ of the body has such a feeble hold on life as the dental pulp; neither is any substance so prone to irreparable destruction, for, without an active and normal pulp, we cannot have a normally developed tooth. Certainly there must be a quantity of nutritive material, and as to quality this should also be normal. These constitutional troubles we often have, and, less the magnitude; about as difficult to understand the etiology as osteoporosis and many times likewise this treatment.

There are many influences which may act upon the developing tooth, as this is the time when the entire system is developing, and we know there are other parts of the body at this period that may be temporarily encumbered by incipient diseases. The

first three molars are most prone on account of the unusual physiological changes taking place; here I think many times the unshed primitive tooth produces much trouble with the succeeding permanent one. These conditions can sometimes be intelligently explained and other times difficult. I have a subject here I think worthy of relating, from the fact that it was a case of constitutional trouble, no doubt. Black filly, Evening Star Standard, by Count Wilkes; bred at Pen Valley Stud, Morris V. Pen; sold in Chicago to Mr. T. J. Vielder of my town. Soon after her arrival I saw her and noted the following symptoms: large bulging appearance over both superior maxillaries, about 2 x 5 inches; masticated her hay badly; also her grain if given whole, poorly; this was January, 1893.

The patient being only about 22 months old, it was not deemed wise to extract the primitive teeth, but after being somewhat conservative for some time and seeing no improvement we extracted first two molars and later on the other four which speculum showed were adhered to maxillary. After this for a time improvement was manifest; then I found the first molar making its appearance, but shortly after the tooth was found to be carious and advised its removal, but owner here being persuaded to change doctors, did so, to my surprise and chagrin.

Consequently I had no further interest in her until the next September, when she was led to the hospital an object of beauty to say the least, a large opening over each sub-maxillary with an enlargement the size of a goose egg on each. After several days of restorative treatment, we went in on one side, some one having removed most of it, and as she could stand the work from time to time, until delivered of the first two molars and a large piece of maxillary. Under rigid antiseptic treatment all healed nicely and patient is now driving every day.

In this case you will observe the teeth were never fully developed; you will also observe a large deposit of cementum upon the roots of primitive, and at time of removal of primitive molars no pulp was to be seen and tooth was all split in fragments on account of blood supply being cutting off. (See William's Surg.

p. 308). I think possibly that internal treatment of iodide potassa might have accomplished a better end; but this is only speculative, as I was informed part of the treatment given her when not under my care was iodine.

Caries.—I think caries seldom occurs except as a result of pulpitis or pericementitis producing change and inflammation in dentine. True, it may occur in old animals from other sources, but even then, I think, rare. When from this source the tubes fill up with a deposit of earthy salts, but not normal dentine, not allowing any circulation to dentine again; pulpitis may suppurate producing complete loss of same. When such is the case an alveolar abscess is generally the result.

As a rule if pus forms, the pathological changes have been so severe that if allowed to go on for any length of time the oral fluids of the mouth are highly destructive to the dentine, and here permit me to say I believe the vegetable diet of the horse to be the most destructive to dentine of any foods, and when allowed to decompose with the oral fluids accomplishes then a rapid destruction of dentine and also enamel. How often do you see diseased teeth in the carnivora? And diseased teeth among the American Indians, it is said, was scarcely known. When caries arises as a sequel of traumatism, I find the teeth split up in fragments, same as when blood supply is cut off, as from death of pulp, showing it is only another means of destruction of same as in the subject here. Caries is confined almost exclusively to the molars, but may sometimes occur in incisors as subject here.

Treatment of Caries.—With all deference to our scientific veterinary dentists, who treat the teeth of our patients by filling and such like, I would in no way speak disparagingly, but must assert that I have small practical faith and as most of us here are country practitioners, dealing with a class who are interested in the advance of our profession, so long as our work is a success; but if we do our work, charge a fee, no matter what the display of skill, etc., if the operation is not a success, ten to one he will go elsewhere and probably to the grossest bungler, who will re-

move the offending member, expose to the owners eye the true condition with a free lecture about such fair surgery, he has gained the owners confidence and will, perchance, hold it and it is all this way that empyrism lives to this day. I think I have seen cases that might have been a success from filling, but as a positive diagnosis is so often uncertain that I say be sure you are right in making an extract of a carious tooth; the first essential thing and one of the most, is light, and plenty of it; next expose the crowns; have them washed clean by flushing out all food, etc., then examine with instruments; but what I use is a drill like this or a scorcher to top the crown; if there be pus in alveoli there will be an œdematous swelling externally. I have watched two or three cases where the swellings were manifest and every one came in to be extracted in from a few weeks to a few months later. This œdema will disappear in a few days after the tooth is removed; how to do this best; I prefer extracting first three superior molars if the crown will permit; when not trephine. Some practitioners split the bones with a chisel, take a punch and drive them out. I do not approve of this for I have seen several cases operated on in this manner that have done very badly; the reason being that the operation was only immediate, leaving some necrosed bone shut up to produce various diseased conditions of the surrounding parts. I observe some of our dentists recommend operating standing; I have tried this manner, but prefer the later recumbent position with a strong operating halter holding the nose up when the assistant's labors will be very much lessened and your work less annoying. If you have removed a great deal of bone for any special reasons, antiseptic dressings must be used after, and a favorite method of mine is to take a two, three or four quart syringe, make a creoline solution 1 to 20, gradually reducing each day until 1 to 60 is reached and flush freely all the exposed inner structures; this solution, when about the temperature of the body, is non-irritating; after this is done dust the cavity with camphorated boracic acid 4, iodiform 1, and fill same with absorbent cotton. I believe as Prof. Sayres, that carbolic acid, though an antiseptic, produces a

deposit of earthy salts, peroxide hydrogen or pyrozone, if you are treating the dentine, or a sinus when the cause has been removed.

Pericementitis.—This condition is one of inflammation of periodontal membrane and the vascular net work; but as this has been fully described by Prof. C. E. Sayres in the AMERICAN VETERINARY REVIEW, vol. 14, p. 144, we will only make mention of same here and add that we use aconite and arnica, but gangrene and abscesses are turbinated cases. I have frequently seen these conditions as a result of dentition and two cases I will illustrate. Several years ago I was called to examine some stock and among others a black draft, two year old colt, with one of those characteristic enlargements so often seen over the first, second or third molars during dentition. I looked upon it as of small consequence, that when tooth was cut it would probably disappear. Several months later I was summoned again to diagnose the case. I could not. He was fast losing all power of locomotion of hind quarters; symptoms somewhat that of motor ataxia very much more severe, and in spite of all treatment he finally became completely paralyzed and was destroyed.

Having seen one other case of abscess, I was suspicious of a like condition, notwithstanding the clinical symptoms were far different, etc. I paid \$8.00 to have the head and spinal column brought to my office as I had no opportunity of holding a post-mortem on the premises.

Post-mortem.—Spinal cord normal, but when the head was sawed transverse to the enlargement mentioned on maxillary a large cyst of viscid fluid mingled with pus extending up against the ethmoid cribiform plate filling up the superior turbinated bones, and to my surprise so great was the pressure from the imprisoned fluid that it did not burst the delicate structure of the turbinated. The cause here was the cutting of a molar and could no doubt have been treated successfully by trephining the frontal sinus and puncturing the delicate turbinated. When I discovered this I felt like giving the other \$2.00 for a strong man to have kicked me all over my premises, but it was not convenient to get the right man, so I contented myself by acknowledging what a

fool I had been. The other one was just about same as post-mortem which was seen.

Some time previous to this one owner complained of horse running at one nostril for several months. This upon post-mortem was found to be due to third superior molar having been split and infection through this resulting in gangrene of all the turbinated on other side with the superior filled with foetid pus. We occasionally meet with diseases of frontal sinuses and ethmoid bones, foetid discharge from nostrils, septic ophthalmia, etc., with great emaciation. I have a case of this kind under treatment now. I trephined frontal sinuses, removed the inspissated pus, then irrigated the cavity with creolin solution daily until all heals and discharge has ceased. Indeed I am of the opinion that many cases of malignant catarrh could be more satisfactorily treated in this manner than by inhalations of medicated steam, etc.

THE EXTERNAL CONFORMATION OF THE HORSE.

BY PROF. E. A. A. GRANGE, V.S., Michigan.*

(Continued from page 325.)

The withers (Plate I, 6) is that elevated portion at the top of the shoulder, the highest part of which is the point to be selected when measuring the height of an animal. They are usually described as being *high* or *low*; the latter variety, however, is we believe, more apparent than real, as the length of the bones which form them does not vary as much as one would at first be led to suppose. I have in my possession at this writing a mare, which six months ago was so high (?) in the withers that a pad had to be arranged under the pommel to prevent it from bruising those dainty parts; at this time she is ridden every day with the same saddle (which has not been repadded) and there is abundance of room between the top of the withers and the under surface of the pommel of the saddle; her withers look lower, but there cannot be any doubt but that this appearance is to be

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accounted for by the increase of fat in the animal's condition. We think a good substitute for the expression high and low withers would be, *well defined* or *obtuse* withers, the former taking the place of the expression "high" the latter of the expression "low"; we do not pretend to say that the comparative length of the bones do not vary, but that the variation is not so great or so common as is generally supposed.

Horses with high withers, whether they be well defined or obtuse, are able to perform rapid movements with more grace and facility, other things being equal, than those in which the bones are short, making the withers *really* low. This is to be accounted for by the fact that the long arm of a lever (the trapezius muscle) is made longer, and hence its power to swing the shoulder blade backwards and forwards, like the pendulum of a clock, leverage is diminished to a greater or less extent. We are inclined to think that the view we have taken accounts for some horses which look as if they were low in the withers, and are still able to trot and perform other rapid movements with the greatest facility, and that in them the withers are really high, but they do not look so, because they are obtuse and not well defined.

In the selection of an animal, the style of the withers should be well considered. When a saddle horse is to be judged the withers should be well defined in order that the saddle may sit comfortably upon the back. Horses with obtuse, round or low withers do not carry the saddle nicely nor its occupant in a comfortable manner, as there is a good chance for the saddle to roll or become otherwise misplaced.

If the coach horse or roadster is under consideration, then those with round withers are not so objectionable, but the low variety, that is those with short bones, are not desirable, unless the action of the animal is such as to warrant them.

In draft horses there is no objection to low withers, though in a general way horses with this part well defined are usually most admired.

It is not an uncommon thing in stallions to find an appearance of the withers obliterated on account of the neck coming

down into the middle of the back as it were. Yet such animals are quite liable to produce offspring with well defined withers.

The back (Fig. I, 7) is that part of the animal extending from the withers to the highest part of the croup, a point formed by the approximation of processes belonging to the haunch or edge bones, the posterior third (approximately) of the back forms the loins, or coupling, as it is sometimes called. Some writers describe the *back* and *loins* as separate parts, but it always appears to the writer that the latter is only a continuation or part of the former, for when we come to consider roach and hollow backs, we find the anterior and posterior part of them so intimately concerned in the peculiar conformation that it is somewhat difficult to tell where one begins and the other leaves off; that is the living creature, though in the skeleton the line of demarcation is well marked, so much so, that there is good reason for those who prefer to describe them as separate regions to do so.

In selecting a horse the uses the animal is intended for must have due consideration before the back is pronounced upon as being desirable or otherwise; for instance, a horse with a tolerably long back may look well in harness, while the same creature would look entirely out of place under the saddle.

Our experience in saddle horses has led us to prefer those with short backs and strong loins with a gentle dip, not sufficient to come under the head of *hollow back*, but enough to do away the *straight edge* appearance. The dip we wish to emphasize should be very slight and more apparent as we approach the withers.

Roach-back horses are not desirable for saddle purposes, because in them the gait is usually rough, producing a degree of concussion upon the rider which is unpleasant, to say the least of it.

The horse with the hollow back is often graceful in its movements, and on that account is agreeable to ride, but the style of conformation is not admired and the deformity is liable to increase with age, and more rapidly if weight is applied to its surface.

When the back of the saddle horse is short and the loins broad, it is well adapted to carrying weight, and its various evolutions

can be performed with the greatest facility, the broad loins giving plenty of room for the attachment and development of one of the largest muscles in the body, which extends, one on each side of the spine, through the regions of loins, back and withers, and is concerned in nearly all movements of the body. We can scarcely conceive an animal doing a good day's work in the saddle, at the plough, or on the road, if this muscle is not well developed.

For harness purposes the back may be somewhat longer. The moderately long horse has a more or less rangy appearance in harness that is often admired. If an animal is intended for fast, or even moderately fast road work, the back should then be of about the same conformation as that of the saddle horse.

For draft purposes the back which has most admirers is the one which is rather short but broad and straight.

The croup (Plate I, 10 and Plate II, Fig. 14-14) is that part of the upper surface of the body extending from the highest point of the hind quarters to the dock, and embraced between two imaginary lines drawn from the quarter to the point of the hip, one on each side. When the croup is long it shows that the bones forming the foundation of it are long, thus giving plenty of room for the development of these powerful muscles which are often spoken of as the propelling powers of the animal. We give the preference to the horse with the long croup. The slope of the croup is another point which should engage our attention when studying the external conformation of the animal; many persons believe that the drooping quarters are indicative of speed, and while it must be admitted that many fast horses are so formed, yet so many record-breakers are built on the more horizontal plan, that we are forced to believe that the slope of the the croup has little to do with the animal's merits, but it certainly has with the beauty of the creature, for when it approaches the horizontal, that is just slopes a little, the tail comes from the body in a manner that admits of its more graceful and elegant carriage, which gives a finish to the contour of the whole animal that is a striking contrast to the indifferently carried tail of the drooping croup, with its low set dock.

In those horses with slanting or very drooping croups the tail usually comes out low down.

The dock (Plate I, 11) or root of the tail is a part which should always be observed when examining a horse, and the animal required to perform in its various paces, then the examiner can readily judge if there is anything radically wrong with its carriage or shape.

Many persons regard the resistance offered by the muscles of the dock when, for instance, the crupper being applied, as an index of the animal's strength and endurance, and it does seem that stiff docked horses are generally good ones, yet we have seen so many limber docked animals which were capable of performing in a most satisfactory manner, that we would hesitate in condemning the horse with the limber dock without some further evidence that it was an inferior animal.

The thorax (Plate I, 22) or chest is a region which is of great importance from every standpoint that a horse is judged, and it usually bears a somewhat close relation in shape to the kind of work nature has intended the animal to perform. For a familiar example of this we have only to look at the chest of the greyhound to see what a striking contrast it presents with his more surly neighbor, the bulldog, or observe the difference between the shape of the thorax of the English thoroughbred and the Scotch draft horse. In the former we find it deeper from above downwards and comparatively narrow in the bosom; his admirer tells us that he likes 'em deep through the girth! While the connoisseur in the draft class must have them with a good broad breast, with a large full bosom and fore legs well apart. We must not forget, however, that this narrowness of chest and fullness of bosom is modified a good deal by condition, and probably does account to a considerable extent for the well trained and thin race horse being able to gallop with such ease and precision, when the same animal if fat would go awkwardly in comparison. Our observation has led us to believe that the narrow chest, that is comparatively narrow, is more essential to the fast, easy stride of the galloping horse than it is to the trotter; but we do not

admire any horse whose front legs, to use a horsey expression, look as if they "came out of the same hole."

The shape of the entire chest, apart from the front legs and muscles connecting them to it, has been aptly compared to a truncated cone with its apex turned forwards and the truncated or cutaway part following the line of the lower extremities of the floating ribs. The ribs form a large portion of the bony framework of the chest, and to them it largely owes its shape. There are usually 18 pairs of them, which vary considerably in size and shape in all animals, whether they be draft or saddle horses, and it is generally conceded that the merits, as well as some peculiarities of the individual, depend upon the shape and length of them. The first few pairs, those that are underneath the shoulder blade are rather straight, and those behind it are somewhat bent. The ribs increase in curvature from the first pair, which are nearly straight, to the last pair, which are so much curved that they describe a considerable portion of the circumference of a circle; they increase in length from the first to about the ninth pair, and from this pair to the last they get shorter; it is this progressive shortening which gives the truncated appearance to the osseous walls of the chest. The ninth pair of ribs, being longer than the rest and being situated where they are, gives depth to the girth, the point that is so much admired, especially in horses used for any saddle purpose.

Professor Williams, one of our eminent veterinary authorities, says that "shallow chested horses are prone to heaves." In all horses the ribs should be well sprung, or have a well defined angle; that is to say, from about the 7th or 8th pair backwards they should come out from the spine in a manner approaching the horizontal, the dip downwards and soon recurve inwards, towards the central plane of the body. The angle is the part where the rib dips downwards, and when it is well defined it is a good point for several reasons; in the first place it shows that there is plenty of room for the implantation of the large muscle (*longissimus dorsi*) already referred to when speaking of the loins, then the angle does away with the flat sides so often found in

washy, delicate creatures. The ribs are considered well arranged when the distance between the last one and the point of the hip is little more than the breadth of a hand, such animals are said to be well ribbed up; but when this space is considerable, the horse is spoken of as being loosely coupled, which is frequently associated with narrow loins, the two together producing a style of conformation that is seldom fit for a good hard day's work in any capacity, while the horse that is well ribbed up, other things being equal, is usually able for anything that it may be called upon to do probably the secret is, that in such horses the chest is well formed and spacious, giving the heart and lungs plenty of room to perform their various functions with ease and comfort.

The abdomen varies perhaps more than any other part according to the feed or natural condition of the animal. Some animals are always very full owing to the actual size of the organs contained therein. When the dimensions are very large they spoil an animal's appearance to some extent, and, on the other hand, we occasionally meet with horses that will not fill up always appearing tucked up in the flank; such animals are often poor feeders and consequently not able to do a hard day's work.

The skin should be supple and loose, having an abundance of little glands whose presence and healthy condition are indicated by the glossy appearance of a well groomed coat.

The fore leg is situated upon the front part of the side of the chest, or rather that part of the leg above the elbow joint, and in a general way it responds to the six anterior pairs of ribs.

The part of the shoulder which extends from the point in an upward and backward direction to within a short space of the top of the withers, is the portion of which deserves closest scrutiny when examining the conformation of an animal, for by the incline in the anterior surface of the region we are able to tell, with more or less certainty, what kind of action the animal will have as well as judge it in some other particulars. We cannot call to mind ever having ridden a horse with straight shoulders that was an agreeable animal as far as its gait was concerned.

Horses so formed are invariably rough and stilty in the trot, and when it comes to the slow gallop they "go short" and get too far away from the ground in the stride, which is so marked in some individuals that it approaches the bucking gait, and is very different from the elastic graceful movements of the horse with oblique shoulders.

For heavy slow coach work the straight shoulder answers very well, but they are best adapted for draft purposes where the horse is seldom required to go off the walk; in this latter class the entire surface of the front of the shoulder will be flush against the posterior or draft surface of the collar, and when an animal so formed throws his weight into it (the collar), the creature will most likely feel comfortable and every effort to move the load will have, comparatively speaking, greater influence. It is not to be inferred from what has just been said that horses with oblique shoulders cannot pull and pull well; or that horses with straight shoulders cannot perform fairly well upon the road in light vehicles, but other things being equal they are best adapted to the uses assigned to them. Through for saddle purposes the parts must be oblique to modify or dispose of concussion. The space between the point of the shoulder and the elbow joint is sometimes called the arm. We do not know of any special style of conformation that needs description in this region as it is invariably formed in an acceptable manner, but below the elbow joint the leg should be thoroughly examined, and first of all we have the forearm (Plate I, 30) to take into consideration. This should be formed of well developed hard muscles standing boldly out. The circumference of the arm as measured with the tape line is not a good guide to the merits of the creature, for two reasons, in the first place when we come to measure horses by the scores, we will find in some of them, that the pectoral muscles which are concerned largely in binding or attaching the fore leg to the body, are (some of them) attached to the inside of the fore leg, just about opposite the elbow joint, while in some individuals this attachment appears lower down; so much so, that it will be included in the tape line when measuring the part, and

as this muscle is not regarded as one of the muscles of the fore arm, it seems unfair to include any of it in the measurement of that part. In the second place the skin of some animals is thicker than that of others, while a species of second skin, that binds down the group of muscles which enter into the formation of the fore arm and called *fascia* by anatomists, is considerably denser in some than in others; again fat is found filling up the parts, so as to make them appear larger, while the muscles themselves may be somewhat poorly developed; but where we find individual muscles standing clearly out by themselves, that is with slight depressions between them, amounting in some instance to grooves, and when they are firm, cordy as it were, to the touch, we may be tolerable certain that such muscles are composed of good tough fibers that can stand the strain and are consequently well developed.

It may not be apparent to all why it is so essential for a good horse to have a well developed arm, but when we come to examine those instantaneous photographs, so common in these times, we will at once see that much depends upon the perfect action of the arm in order that the pace may be continued in anything like a harmonious manner. It will be seen in Plate V, Fig. 2, that at certain stages of progression the entire weight of the body is upon one fore leg, and that the muscles of the fore arm have to carry it over a center as it were, something in the same manner as the athlete progresses with a leaping pole,—the horse must be landed on the other side of the center in a firm, steady manner in order that the next stride may be performed in anything like a proper way, for let anything interfere with the action of these muscles and the next step is so modified that it is far from perfect. We have this often well illustrated in the horse suffering from, we will say for convenience sake, a corn; the animal steps upon something, a small stone for instance, that causes undue pressure at the moment the entire weight of the body is upon the foot, or just as it is about to pass over the center, this undue pressure causes pain which shoots through the whole leg, this causes the muscles of the fore arm to wince and

the weight is not carried over the center and landed on the other side in a proper way, and the animal comes down upon its knees or stumbles along in a somewhat awkward manner, if it does not fall down altogether.

It is generally conceded that horses with long arms are best adapted for fast work, and it is so often referred to as a point of excellence in the trotter that we were led to measure a large number of horses to determine if possible whether any reliable information could be obtained from the length of the arm and its relation to speed, and our measurements go to show that the length of the arm (from the elbow to the trapezium) is greater in the roadster, proportionately speaking, than in the draft horse.

Passing on down the leg we come to the knee (Plate I, 31), this should be nearly straight as far as the outline of its anterior surface is concerned, but the posterior surface is marked by a prominent eminence which does not receive any special name except *the prominence* at the back of the knee. This prominence is far more perceptible in some horses than it is in others, so much so that it stands out boldly behind, and below this point the contour of the back of the leg dips suddenly forward, giving the part a cutaway appearance, and good horses are sometimes condemned for being too much cut away under the knee, when the part is really stronger and better formed than the average. It is true that many horses are cut away under the knee to that extent that the leg is weakened, and will not stand the constant "hammer, hammer, hammer on the hard, hard way," but we must distinguish between the horse with an unusually well developed (trapezium) bone which forms the prominence and the one which is illy formed by being too much cut away under the joint. In the former the condition is more apparent than real, for if we observe the substance of the leg from before backwards just beneath the knee we will find it broad and strong, presenting a striking contrast to the latter, which will be found shallow to that extent that it often becomes a weak link.

The knee should not bend backwards or present a concave

appearance upon its anterior aspect, as this proves a condition called *calf kneed*, a style of formation that is much objected to from the artistic standpoint. Neither should the knee bend forward, as such a condition is indicative of its having been exposed to broader work than the tissues forming it could withstand, though we occasionally meet with horses that are over in their knees, and yet able to do a hard day's work without being materially affected, but such joints present a weak appearance and are consequently unpopular.

(To be Continued.)

REPORTS OF CASES.

KALI IODIDI IN THE TREATMENT OF CHAMPIGNON.

BY W. C. SIEGMUND, D.V.S., House Surgeon, N. Y.

The records of the effect of this form of treatment being yet few in number, and therefore its value not accepted by many veterinarians, the result obtained with the two following cases, are of importance—one of the patients having improved considerably and the second recovered to all appearances entirely.

The interest in these cases will also be no less when the quantity of the medicine administered will be taken in consideration. The first one received as much as 267 drachms, while under our direct treatment, that is from February 15 to April 5, and the second as much as 321 drachms—taking in some part as much as 12 drachms a day.

Case No. 1.—A bay gelding, 9 years of age, was brought to observation at a free clinic February 14, 1894. The owner stated that he owned the animal three years and that he always had a large swelling of the sheath and scrotum, which discharged a foul purulent material in winter time, healing, as it seemed, in the summer; of late the tumor has gradually and considerably increased.

Indeed the scrotum is enormous—the swelling extending more towards the right. There are several running fistulous

tracts. The hard condition of the cord is readily detected in the right groin, but the infiltration is hard and spread on the left side downwards to the sheath. There is a large granulating mass on the right, kind of semi-external scrotal growth.

The animal is in fair condition, but the condition of the parts is such that a successful operation being doubtful, a trial of the treatment by the iodide of potash was decided upon, one drachm three times a day was begun with; after a few days carried to two, and later on to three drachms three times a day.

The local treatment consisted in warm formentation, an injection of a weak solution of tincture of iodine in the fistulous tract, and cauterization of the protruding granulations as the indications presented themselves.

Towards the second week the local effects of the treatment became noticeable, as the enlargement seemed to be smaller, was less hard, and the discharge diminished.

There was, however, no general effect upon the animal, no lachrymation or disturbance of the appetite.

At the end of the third week a new tract had developed which give a profuse discharge.

By degrees the diminution in the growth began to be well manifest. On the fourth week the decrease is very noticeable; on the fifth the discharge has almost subsided, except in the fistula opened last, the growth is smaller. On the seventh week the animal was discharged convalescent, with directions to follow the internal treatment—which, however, was probably not carried out, as being too expensive for the owner.

I saw the animal about the 10th of July, he had then only a small fistula, whose edges were just moist—the tumor was reduced to about the size of a small orange.

Case No. 2.—A bay draught gelding, six years; the driver says that he had noticed a change in the animal's gait for several weeks, and that in walking the horse spread his hind legs far apart. Recently he had found that his trouble in walking had increased, and in examining the scrotum by chance, he noticed that it was the seat of a discharge.

Brought to the hospital it was found that the horse had a champignon on the right side, the size of a large fist, with enlargement of the cord running well in the inguinal canal. From three different fistulous tracts there escaped some pus of thin consistency. The general condition of the horse was good.

The animal was put under the iodine treatment with three drachms doses three times a day, carried to four drachms after two weeks' treatment. Local treatment the same as in the first case.

There was no ill effects from the administration of the medicines, the animal's appetite kept good and there was no lachrymation. The discharge soon disappeared, the fistulous tracts healed and at the end of six weeks' treatment the growth reduced to the size of a small egg. The animal was discharged and returned to his work.

MALLEINE IN GLANDERS.

By J. F. WINCHESTER, D.V.S., Lawrence, Mass.

May 6, 1894, called to attend bay gelding 15 years old, with hæmorrhage from left nostril, which continued for eight hours. The horse appeared normal, with exception of the right submaxillary gland, which was about the size of a walnut. The 7th of May pin-hole ulcer ran on left side septum. Hæmorrhage again occurred on the 14th instant, but not so copious. The horse remained in an apparent healthy condition, and it was thought desirable to test him with malleine, and after taking the temperature in his apparent normal condition for two days, the malleine was used.

June 6th, 10 A.M., 101 2-5° F.; 6 P.M., 100 4-5° F.

June 7th, 7 A.M., 100 3-5° F.; 6 P.M., 101 4-5° F.; 9.30 P.M., 102° F. injected.

June 8th, 6.30 A.M., 104° F.; 8.30 104 3-5°, 10.20 105 1-5°, 12.30 P.M., 105 3-5°, 2.30 105 3-5°, 4.30 105 3-5°, 6.30 105 3-5°, 8.30 104 4-5°.

June 9th, 10 A.M., 103 3-5°.

During the day of the 8th, the horse was still off his feed, and at point of injection a swelling occurred about three inches

in diameter, which was doughy to feel, but did not pit on pressure, and it did not pass away for nearly one week.

After a week a discharge was present from the near nostril, which was white first, not abundant, and it was intermittent; the general condition good.

June 21st, there was an apparent ulcer on the lower part of septum, and on the 22d he was killed, with the following post-mortem changes found.

General appearance good, submaxillary gland on the right side about the size of a walnut; no discharge from nostril; ulcer on septum plain.

The spleen three or four times its normal size, liver contains numerous tubercles, lungs thickly studded with tubercles, numerous centers of active inflammatory action in lungs mostly confined to anterior lobes.

Tubercular deposits in larynx; ulceration of mucous membrane covering the turbinated bone in right nostril, which had appearance of being in existence some time; also erosions of mucous membrane, pin-hole ulcer, plenty of septum. The left side of septum presented numerous chancres, but not deep, and mucous membrane covering its turbinated bones was eroded.

FATAL INJURY FROM A SLIGHT CAUSE—FRACTURE OF OSSA INNOMINATA—INTERNAL HÆMORRHAGE AND DEATH,

BY O. FAUSNER, D.V.L., House Surgeon,

On the 25th day of April, when passing along Lexington Avenue, noticed large bay gelding about sixteen hands high, down on the street, struggling hard to get up. Several men and the coachman were trying to assist him, but all attempts failed; at last one decided to throw ashes on the pavement, the whip was applied freely, the animal tried to get up on his fore legs, stayed in that position for a few seconds and fell again. The pavement was smooth and wet, which made it very slippery, the ashes did assist some, but the animal didn't seem to have any power in both hind legs. Many attempts were made,

and at last the animal was exhausted, lay there wet with perspiration and breathing rapidly.

The history concerning this animal is very brief and as follows:

He was driven a short distance, one block from the stable, and while standing in front of the owner's mansion, a city sprinkling wagon came along, the horse became frightened, pranced and jumped and finally fell, being afterwards unable to get up.

The ambulance was called and he was removed to the hospital at 2 P.M. The animal was put in a box stall. He showed great colicky pains, looked towards his side, made some attempts to get up, was put in slings and raised, but was entirely unable to stand up. There was sensation and motion of the hind legs. The animal kept on struggling until 4 o'clock, which after all attempts to quiet him had failed, he died.

At the post mortem the abdomen was found to contain a large quantity of blood, about a pail and a half full, the cellular tissue of the pelvic cavity as well as the bladder were infiltrated with blood. The ischio-pubic symphysis on its whole extent, the floor of the right pubis, the ilium at the neck on the right side as well as the internal angle of that bone were shattered in a large number of pieces of various dimensions. The blood-vessel through which the hæmorrhage had evidently taken place and probably caused the death could not be made out.

Taking in consideration that the horse was much advanced in years, is it not singular to have with such extensive lesions as the result of a slip and a fall.

PUNCTURED WOUND OF PERINEUM,

By G. A. JOHNSON, D.V.M., Sioux City.

Read before the Western Iowa Veterinary Medical Association.

On the evening of March 14th, was called to see a mare reported as being enagged; arriving at the place about 9 P.M., I found a standard bred mare weighing about 1000 pounds, and about eight months in foal, suffering from a punctured wound of

the perineum, contracted while in a lot with other horses, presumably the result of kicking and striking the handle of an iron pump, as this was the only thing in the lot that could have caused such a wound. The wound extended along the perineum, just at the edge of the hair, parallel to and about the same length as the vulva.

Having syringed out the wound with a strong solution of creoline introduced my hand, and to my surprise followed the track of the wound forward along side of and partially under the vagina and bladder into the abdominal cavity.

Hastily examining the parts to ascertain if there was any splinters or debris, and finding none except a few blood clots, and some shreds of lacerated tissue which I removed, then injected more of the creoline solution, a portion of which entered the abdominal cavity, but was forced out by the mare straining. Then opened the wound as far as possible and dusted the walls, by means of a powder gun, with a powder composed of two parts, by weight, of pulverized hydrastis and one part of boric acid, then took two interrupted sutures in about three inches, thus bringing the walls of the wound into close apposition, then closed the external wound with three pins and one interrupted suture. Then made an opening in the perineum, about three inches below the wound and up to the cavity and put in a drainage tube, then placed a pad of absorbent cotton over the parts and held it in place by means of a cement made as follows:

℞. Common varnish, $\bar{5}$ ii; zinc oxide, two parts; boracic acid, one part; to make paste, mix, and apply to hair around wound, then apply pad, and as the cement readily dries, it holds pad in place. This makes a very good cement to hold pads or bandages in place.

Prescribed the following internally:

℞. No. 1, F. E. belladonna, $\bar{5}$ iss; F. E. aconite, 3 iii; spirits rectified, q. s. $\bar{5}$ iv; mix. Sig. Give two drachms every four hours, also ℞. No. 2, Potassium iodide, $\bar{5}$ i; soda hyposulphite, $\bar{5}$ iii; pulverized hydrastis, $\bar{5}$ iss; mix part powders No. 12. Sig. Give one powder three times a day in feed.

March 15th, about sixteen hours after the accident had occurred, appetite good, pulse normal, temperature 102° F. Respiration normal; very little swelling except in leg. Treatment continued same as above, except stopped using R. No. 1.

March 17th, about sixty hours after accident, appetite gone; breathing rapid and labored; flank tucked; pulse rapid. thready and weak; temperature 105° F.; some tenderness of the abdomen; syringed out wound with creoline solution; continued same line of treatment and again used R. No. 1, two drachms every four hours. Evening of same day, breathing easier; pulse slower and stronger; temperature 103° F. Appetite improving.

From this time on the case made a very rapid recovery, and the mare dropped a healthy foal on June 26th. This case demonstrates the possibility of successfully treating cases when the abdominal cavity has been penetrated.

EXTRACTS FROM GERMAN PAPERS.

BY RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

FOREIGN BODIES IN THE RETICULUM.

For a period of five years Schöbert has successfully used the following method for the removal of extraneous substances from the digestive tract. It is only indicated when heart injury or pyrexia is not present; the latter is here to be interpreted as symptomatic of suppurative infection.

After casting the patient, the four feet are bound together, a stout post or beam thrust between the limbs, and the animal turned upon the back—which position is to be maintained throughout the manipulation, and places himself on a chair upon the left side of the patient, and works from this point with one foot, upon the left epigastric region posterior to the ensiform cartilage of the sternum.

Six to ten kicks or pushes with the foot is usually sufficient to dislodge the foreign body from the walls of the reticulum.

This procedure was suggested by the fact that cattle in the

abattoir are always placed upon the back in the process of dressing, and any extraneous substance which may be present in the reticulum becomes dislodged and lies in the organ with other material. His process in its application, *intra vitam*, speaks favorably for this system. If the case be one of long standing and rumination has already stopped, a drastic purgative should be given at once.

Out of a total of sixty patients treated in this way, only two failed to recover. One of these manifested increased pain after the massage, and being slaughtered a bent needle was found imbedded in the walls. The diagnosis, naturally a difficult one, and is mainly to be reached by exclusion and the presence of digestive disturbance.—*Monats. f. prakt. Thierheilk. Bd. Hii.*

PUNCTURES OF THE UTERUS.

After every parturition the careful operator should seek for wounds of the uterus and vagina made during the passage of the foetus or its membranes. Injuries of these organs furnish an easy means of infection, and must receive therefore prompt attention. Increase in temperature and pulse rate, thirst, tenesmus, and accelerated respiration after birth, should lead to an examination of the birth passages, even when the discharge from same possesses no evil smell.

The wounds which one meets, generally involve the cervical and vaginal walls; the most serious of these is puncture made by the slipping of the parturition hoof from the foetus, or the entrance of a bone into the submucous tissue—a so-called hollow wound being the result.

The treatment requires the greatest attention, especially when a decomposed foetus or membranes are to be dealt with. Injection of simple disinfecting fluids is insufficient to obtain the required result.

Albrecht recommends the following as the most practical and safest method. Through irrigation of all parts of the uterine cavity with a disinfecting solution. After this, the introduction of a tuft of cotton or wad of cheesecloth, previously soaked

in a 10% carbolic or 30% creoline or lysol solution, into the cavity of the wound, and carried to its fundus. The removal of this dressing is facilitated by tying a string to it, and permitting the same to protrude from the lips of the vulva.

A tear or rent in the cervical walls is to be well cleansed of all shreds by the use of the finger-nail, or suitable instrument—the sharp spoon being suitable for this purpose—and a disinfectant applied on a tent of cotton. Renewal of the dressing in the hollow should, at first, take place more than twice daily, and must be kept up until the temperature returns to normal. After the second or third day A. uses an emulsion of iodoform and glycerine on the tampon of cotton. If the wound is easily accessible an atomizer may be used advantageously in the dispersion of iodoform oil 1.10, or lysol, glycerine 1.10.

The tent in the wounded cervix may be kept in place by filling the calibre of the cervix with oakum, this holding the tent in continuous contact with the wound; this procedure may induce labor pains, but they are ephemeral. Previous to each local application it is advisable to irrigate with warm infusions.—*Woch. f. Th. u. Viehz. No. 16.*

REMARKABLE FOREIGN BODY IN THE DOG.

Veterinarian Reichenback reports in the "Schweiz. Archiv. Bd. 35," the case of a St. Bernard dog that swallowed a piece of wood *twenty-eight inches* long and one-half inch in diameter. The anterior end was located directly anterior to the aperture thoracis, and had moreover about its middle a brass band or ring. The animal was valued at 600 francs.

Previous to the operation the animal was anæsthetized and then a longitudinal incision made in the œsophagus; considerable hæmorrhage did not take place, and by means of a pair of stout artery forceps the object was withdrawn. The latter, when placed horizontally, reached from the external wound to the base of the caudal appendage.

R. closed the wound, and placed a bandage upon the same,

not entertaining the least idea, however, that the patient would recover the internal damage which he supposed the object had wrought.

Upon regaining consciousness, the animal staggered around the yard, drank a bowl of water and indicated a temperature of 106° associated with great thirst.

The urine passed was a reddish color. On the subsequent day the dog was cheerful to a surprising degree, the febrile condition had disappeared; irregular respiration only remaining.

For three days no fæces had been passed. On the fifth day the sutures were removed; only fluid nourishment being tendered the patient. The wound now began cicatrizing, and the irritation due to this natural process, induced the animal to scratch it; the result was an abscess of considerable extent, which in its turn was also evacuated.

The dog finally made a complete recovery. This case is truly a paradoxical one; how the body contained such a long object as that mentioned, without being lacerated fatally, is beyond all conjecture. It is not to be supposed, that of his own volition, the patient actually swallowed this stick; but rather that having had one end of it in his mouth and accidentally receiving an impulse upon the other free end it was forced literally down his throat.—*Berliner Wochenschrift*.

SARCOMA OF THE PERIOSTEUM.

In the dog it is not uncommon to find a general sarcomatous condition of the lymphatic glands, associated with symptoms simulating leucæmia. The observation of Fröhner, however, is somewhat out of the usual line; he reports a case of extensive sarcoma formation of the periosteum with metastatic affection of the kidneys and lungs, which lesions induced symptoms of an exceedingly painful arthritic rheumatism.

On May 30th a seven-year-old male pointer was brought to the hospital, with the history that for the last three weeks the same had evinced pain and lameness in rising and walking, and especially when ascending steps. The rectal temperature indi-

cated 103° F.; lameness in each of the four limbs was recorded; the bones being thickened, and painful upon manipulation, more so in the vicinity of the articulations.

The treatment for arthritic rheumatism was commenced, but no assuaging of the pain, or improvement in locomotion was secured. After five weeks pneumonia complicated the case, and the animal was destroyed. The subcutaneous tissue of the anterior and posterior limbs was infiltrated and the bones themselves uniformly thick and hard. Longitudinal sections of the shafts of the long bones exposed nothing abnormal except an infinitesimal quantity of calcareous particles in the marrow, which indicated *osteomyelitis ossificans*.

On the contrary the external surface of these bones was uniformly covered with deposits of irregular elevation, which had commenced to ossify. The synovial membranes were practically intact; periarticular tissue, on the other hand, much more abundant than normal, consisting of round cells of various sizes, and large spindle-shaped cells. Stomach, intestines, spleen and liver normal. Upon the surface of the kidneys herds of gray white globules. In the posterior lobe of right lung a fluctuating tumor the size of one's fist, which consisted of one central portion, and several smaller ones whose interior was more or less in fluid degeneration. The case was one, therefore, of periosteal sarcoma.

Some years previous Dieckerhoff recorded a case of a horse belonging to the royal stables and affected with general sarcoma. involving all the bones of the skeleton. The growths or deposits were all ossified, hence he designated it osteo-sarcoma.—*Monatshefte f. prakt. Th.*

SARCOMA OF TESTICLE.

For a period of two years a fifteen-year-old stallion had exhibited swelling of the left testicle. Lately the circumference of this growth perceptibly increased, until, when brought to us, it was very little if any smaller than a citron melon. By castration the epididymis proved to be ten times its usual measure—

ment, the weight of the testicle indicating $12\frac{1}{2}$ pounds; the same was 10 inches in length, 7 in breadth and 8 in thickness.

In the parenchyma of this enlargement numerous collections of creamy suppurative pus, contained within scirrhus or indurated knotty tracts. Microscopical examination confirmed the diagnosis of medullated carcinoma. After the operation the general condition of the patient was somewhat affected. After twelve days this state became more serious by the appearance of a high fever, the patient succumbing a few days later.

Post-mortem exposed carcinoma of the spermatic cord; cancerous infiltration of the mesenteric and thoracic lymph glands, with metastatic tumors in the lungs, spleen and inguinal regions. The middle portion of the biceps femoris, where it joins the aponeurosis on the left side, had been lacerated, probably during the act of casting. Bunod reports in *Journal de Méd.*, 1867, an encephaloid cancer of the right testicle which weighed 9 pounds (4500 gr.). Also in this case subsequent fever, great swelling and dyspnœa, death and metastatic tumors in various parts.

Bayer suggests, therefore, that the appearance of the carcinoma in other parts of the body—or at least their virulence—to be primarily due to the operation itself. As additional proof of this he mentions a lymphatic swelling in the inguinal region, which had so augmented since the operation as to be almost the size of the original tumor.—*Oestew. Zeitschr.*

LUXATION OF THE FEMUR.—We were lately called twice in one week to see cases of displaced femur. The first was in a cow, three days after it had occurred. This animal had slipped while urinating, and was unable to rise without assistance; we diagnosed luxation of the hip upon the left side. The head of the femur had glided downward into the ischial foramen, in which location we discovered it by rectal examination. Crepitation was discernible upon movement of the limb. Temperature not increased; appetite normal.

The second case was that of a bull which had, during attempts at coition, fallen violently to the ground. The animal

was unable to rise, and upon our arrival two hours later we were unable to induce movement of the posterior extremities, even by use of the sling.

Manipulation determined the cause to be dislocation of the femur, with the head of the same inferior to the acetabulum. In both instances our attempts at replacement were futile; we applied chloroform and external taxis in the case of the bull, but without the desired result. The animals were slaughtered, and their meat utilized; pelvic fracture was not present.—*B. T. Woch.* 11, '93.

CITRULLINE AS PURGATIVE.—According to *Archiv. f. wiss. u. prakt. Th.* Baum has just concluded experiments upon the application of citrulline or colocynthin as a purgative agent; his results confirm those of Ellenberg. Kohlstock had previously used this medicine in clysters, and records the fact that subcutaneous injections are not advisable, from their painful character.

Baum administers the agent to all the domestic animals as a clyster. He gives to horses a mixture of 1 to 15 gr. of citrulline in 6 ounces of alcohol and glycerine; This occasions a prompt movement. The action is more severe when divided into four parts and one part given every half hour. In swine we have in this remedy a safe and sure purgative in 1-15 gr. doses, and here it is also associated with glycerine and alcohol. Dogs take 1-20 gr. Sheep seem to resist its action longer than any of the common animals.

LORETIN.—This agent, discovered by Prof. Klauss of Friedberg, is intended as a substitute for iodoform, for which so many medicines have already been placed upon the market. Previous experiments by Dr. Augerburg have proven the absence of any toxic character. The author dusted the powder upon a wound that had been discharging for three weeks; the injury was fully the size of one's palm, and healed perfectly in four weeks.

After this the powder was used by Fengling in several wounds, and its good results confirmed. In parasitic skin diseases dusting the powder over the affected patches, after

previously subjecting to a thorough cleansing, is sufficient to accomplish dispersion.

Loretin is free of any secondary working; it is yellow in color and completely odorless; slightly soluble in water 1.130; when strewn upon the surface of a wound it forms a crust, protecting the same. Besides this it is applicable as a sodium salt wherein a watery solution; chemically it is metaiodorthooxy-chinolinanasulphric acid and forms with sodium carbonate a neutral salt, very soluble in water and useful in a one or two per cent. solution as a cleanser of wounds.

Loretin dries more rapidly than iodoform. In eczema and blood-ear of the dog its exhibition has been of value. Also when combined with collodium 2.4% it forms a good application. —*Deutsch. Th. Wochenschrift*.

ACUTE LEAD POISONING IN CATTLE.—In November and December, 1893, a farmer lost eight cattle within a few days. We were called to see the ninth patient which, after having the history of the others, we promptly placed under heroic treatment. This animal exhibited strong salivation amaurosis, attacks of delirium and falling fits. In the other eight cases the slaughtered animals all showed hyperæmia of the cerebrum after death. The ætiology of the affection remained most obscure until the owner accidentally remarked that a considerable quantity of white lead had been thrown upon the manure heap, previous to its being scattered upon the meadow where the animals fed. The flesh of the subjects was consumed without deleterious effects. —*Lchweis Archir*, 24, '93.

INOCULATION OF ANTHRAX.—The experiments which up to the present time have been prosecuted upon the inoculation of the bacillus anthracis, by means of injection in the cornea, have been of negative results.

Strauss, after cocainizing the optic organ, introduced cultures of the bacillus containing spores and blood between the lamellæ of the cornea. In four out of five cases he observed an anthracoid keratitis, followed in seven to eleven days by a general

infection, and finally death of the experiment animal. The an-thrax œdema encroached upon the eyelids, thence to the face, ultimately reaching the neck. Strauss compares his researches with similar experiments which he conducted in company with Chambon and Menard, upon the inoculation of vaccine virus through the cornea of the calf. In this instance he was also successful in securing a keratitis and immunity, although the latter developed slower than the ordinary method of vaccination.—*Fortschritte der Medicin*, No. 10.

EFFECT OF TEMPERATURE UPON TUBERCLE BACILLUS.—The experiments upon the resistance offered by the bacillus tuberculosis, as found existing in the milk of phthisis cattle is concisely tabulated as follows: The material used in the trial was confined in small glass tubes, and subjected to heat transmitted indirectly through a water bath.

At a temperature of 101° F. four hours were required to kill the bacillus; at 140° F. one hour; at 158° F. ten minutes; at 176° F. five minutes; 194° F. two minutes; at 203° F. one minute.

A temperature of 122° F. was insufficient, after twelve hours' action, to destroy the tubercle. At 154.4° F. the taste of milk becomes altered, this fact is of paramount importance, for if milk be heated at 149° F. for fifteen minutes, the dangerous quality of the same becomes annihilated.—*Allg. Med. Centralzbg.* 78.

JABOT.—A horse in the 49th Uhland Regiment had refused his morning rations. One and a half hands anterior to the cariuciform cartilage of the sternum a movable, hard swelling was situated, the size of one's fist.

The patient was apathetic, and vomited continuously; a painful cough was heard now and then, subsequent always to the retching movement. The case was diagnosed one of foreign body in the œsophagus, and the operation for its removal was immediately commenced.

The swelling vanished, but returned at once the animal re-

gained his feet. In the following two days the difficult deglutition disappeared, and the tumor likewise. In eight days the animal was again reported as indisposed. Great pyrexia pervaded the body, and the diagnosis of pneumonia, evidently of traumatic origin, was reported. Fourteen days later the patient succumbed.

Post-mortem revealed a diverticulum of the œsophagus at a point corresponding to the region occupied, *intra vitam*, by the external enlargement. The mucous membrane was in shreds and necrotic. Also another rupture of the gullet in its course through the thorax.—*Sachs. Vet. Ber. 1892.*

BIBLIOGRAPHY.

Hygiene of Domestic Animals by H. Boucher of the Veterinary School of Lyon with introduction by Prof. C. Cornevin. 1 vol. in 16 mo. J. Baillière & fils, 19 rue Hautefeuille, Paris.

This book is the third volume of the Cadeac Encyclopedia, and in it, under a concise, clear form, and in conformity with the most recent discoveries and applications of veterinary hygiene, will be found the most precise notions relating to the study of the proper means to keep animals in health, and protect them against injuries or diseases likely to diminish their value.

In the first part the author studies the soils, water, atmospheric and climatic influences, and after examining their various physical and chemical properties, their constitution, preservation, bacteriological condition, etc., this part is completed by the consideration of the subject of acclimatization.

In the second part, stables and their construction, harnesses, grooming and feeding furnishes very interesting material for consideration. This part is probably the most important of the work; contains no less than 200 pages and presents to the reader a review of the various food of vegetable and the animal origin with a consideration upon their composition, digestibility, mode of preparation, sophistication and preservation.

Like its predecessors, the third volume of the Encyclopedia

is written in a pleasant reading manner, well printed and bound. One more good addition to classical veterinary literature..

Précis de Pharmacie Vétérinaire pratique. By Mr. M. Ducassé, of over 500 pages with 40 illustrations; Asselin et Houzeau, Paris.

A nice volume where, after a few general considerations seven chapters present the subject of veterinary pharmacology in a concise, yet complete manner. The sixth and seventh chapters contain a long list of the various veterinary preparations in use with the peculiar manners in which they are put up. The tinctures, various solutions, mixtures for baths, drenches, counter-irritants, electuaries, extracts, etc., etc., with their preparation, doses, indications, are not useful for the veterinarian who generally makes his own drugs, as is commonly the case in country practices and are well described in Mr. Ducasse's work. A good similar work in English would no doubt prove very useful.

A Manual of General Histology by W. S. Gottheil, M. D. (Sabiston, Murray & Co., New York.)

A very concise book of just one hundred and sixty-eight pages, most interestingly written for beginners in the study of Histology; not doing justice however, to the well known ability of the author.

Horse's Teeth by W. H. Clark, (Wm. R. Jenkins, New York.) The fourth edition, re-revised of a work which contains as its predecessors many pages of valuable information, but which besides has a second appendix in which we notice four very interesting pages on the "Marks of the Equine Age among the Ancients."

Mr. Clarke deserves a good deal of credit for this special work and we hope he will receive ample proofs of the public's appreciation for it, specially from veterinarians.

Eighth and Ninth Annual Reports of the Bureau of Animal Industry, 1893. Containing in detail the work accomplished during 1891 and 1892, and with its several additional articles on the "Condition of the Poultry and Egg Industry" by Dr. J. A. Dodge; on the "Mule, its uses etc., etc." by Mr. J. L. Jones; on "The Bottom Disease" in South Dakota, by Dr. E. Schroeder.

 BOOKS AND PAMPHLETS RECEIVED.

L'Age du Cheval et des principaux animaux domestiques, by Mr. M. Dupont. (Baillière et fils). *Guide Pratique Vétérinaire*, par Mr. J. A. Lacassin. (Baillière et fils). *Die Subcutane Myotomie des Schweifes bei Pferden*, by Dr. P. R. Brüchert, (Richard Schoetz, Berlin). *Castration du Cheval Cryptorchide*, by Prof. P. J. Cadiot, (Asselin et Houzeau). *La Pneumo Enterite septique des veaux*, by Prof. V. Galtier, (Asselin et Houzeau). *La Vie et l'Energie chez l'animal*, by A. Chauveau, (Asselin et Houzeau). *La Rage et les Moyens de s'en Preserver*, by Prof. E. Nouved, (Revue Scientifique). *La Malleine ses applications pratiques*, by Prof. E. Nocard, (A. Maulde & Co., Paris). *La Tuberculose Bovine*, by the same.

Journals exchanged.—Veterinarian, Veterinary Journal, Veterinary Record. Journal of Comparative Pathology and Therapeutics, Recueil de Médecine Vétérinaire, Revue Vétérinaire, Journal de Zootechnie, Progrès Vétérinaire, Presse Vétérinaire, Annales de Pasteur, American Veterinary Magazine, Clinica Veterinaria, Schweitzer Archiv, (Zwirch), Gaceta de Medicina Veterinaria, (Madrid), Giornale di Medicina Veterinaria Pratica (Torino), Zeitschrift für Veterinarkunde, (Berlin), Der Hufschmied, (Dresden), Wochenschrift für Thierheilkunde und Viehzucht, Revue für Thierheilkunde und Thierzucht, (Wien), &c., &c.

 SOCIETY MEETINGS.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The Fifth Annual Meeting of the New York State Veterinary Medical Society, will be held at Albany, N. Y., on Wednesday and Thursday, September 12 and 13, 1894.

The meeting will convene at 10 o'clock A.M., September 12th.

After a short business session the following very interesting papers will be read and discussed.

By Prof. James Law, subject, Tuberculosis.

By Prof. A. Liautard, subject, Veterinary Education in Relation to Veterinary Practice in New York State.

By Dr. E. H. Nodyne, subject, Tetanus.

By Dr. C. D. Morris, subject, Meat Inspection.

By Dr. J. M. Chase, subject, The Use of Creoline Compared with other Antiseptics.

By Dr. Geo. H. Berns, subject not decided.

By Dr. F. J. Thornbury, subject not decided.

Also other papers will be read and discussed.

Every veterinarian in New York State should become a member and take an active part in the workings of this Society.

Notices and programmes will be mailed to all veterinarians throughout the State.

Blank applications for membership will be furnished to all who apply to the Secretary-Treasurer for same, and can be acted on at the next meeting if properly filled out and returned on or before September 5th.

Very respectfully,

N. P. HINKLEY, D.V.S.,

Secretary-Treasurer, N. Y. S. V. M. S.,

395 Elliott St., Buffalo, N. Y.,

To whom all correspondence should be addressed.

TO THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

Rates of $1\frac{1}{3}$ fare have been made over the following railroads in trunk line passenger territory, to wit:—

Addison and Pennsylvania; Allegheny Valley; Baltimore and Ohio (Parkesburg, Belliare and Wheeling, and east thereof); Baltimore and Potomac; *Bennington and Rutland; Camden and Atlantic; Central of New Jersey; *Central of Vermont; Chautauqua Lake (for business to points in trunk line territory); Cumberland Valley; Delaware and Hudson Canal Co.; Delaware and Lackawanna; Elmira, Cortland and Northern; Fall Brook Coal Co.; *Fitchburg; Fonda, Johnstown and Gloversville; *Grand Trunk; Lehigh Valley; New York Central and Hudson River (Harlem division excepted); New York, Lake Erie and Western; New York, Ontario and

* Only for business originating at, or destined to, stations on the direct lines of these roads between Troy, N. Y., and Montreal, Canada.

Western; New York, Philadelphia and Norfolk; New York, Susquehanna and Western; Northern Central; Pennsylvania; Philadelphia and Erie; Philadelphia and Reading; Philadelphia, Wilmington and Baltimore; Rome, Watertown and Ogdensburg; Western New York and Pennsylvania; West Jersey; West Shore; Wilmington and Northern.

To annual meeting in Philadelphia Sept. 18, 19, 20, 1894.

Members when buying tickets apply for same thirty minutes before train time, and secure a certificate from agent from whom the ticket is purchased.

T. J. TURNER, *Sec.*

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association will meet at Millersburg, O., September 26th at 7 P. M., and 27th at 9 A. M., during the County Fair. Important business and valuable papers will be read, and a profitable and good time is anticipated.

W. H. GRIBBLE, *Sec.*

CORRESPONDENCE.

TUBERCULOSIS IN NEW YORK STATE.

MIDDLETOWN, N. Y., July 4, 1894.

Editors of AMERICAN VETERINARY REVIEW:

GENTS:—I would like to call the attention of the proper authorities, through the REVIEW, to the condition of the dairy stock in this part of Orange County.

About a year ago I began to make an investigation regarding the prevalence of tuberculosis in this locality.

Among the herds examined by me, was that owned by the State Hospital in this city. In which case I used tuberculin; about one-half (30) cows, were found to be affected, these have since been killed.

In another dairy of about thirty cows, fully one-fourth of them have tubercles in the mammary glands, the latter condition is of common occurrence in this vicinity. I am frequently

called to see two or three cows at one time with acute tubercular mammitis, especially is this the case after cold storms.

There is scarcely a week passes but what I am called to examine tuberculous subjects.

What are we going to do with them?

I have repeatedly notified the State Board of Health, but have never been able to have anything done with these herds.

It is a common occurrence to see tuberculous subjects killed for beef, even the emaciated subjects are sold for from two to five dollars, to be used up in the manufacture of bolognas. Orange County is one of the largest milk-producing counties in the State, consequently there are a large number of cows which are not profitable for the dairy killed for beef.

There is not to-day a Veterinary Inspector in Orange County. Is it not time that some competent man was appointed to put a stop to such traffic.

Respectfully yours,

J. S. SUTCLIFFE, V.S.

TUBERCULOSIS OF THE HEART.

MIDDLETOWN, N. Y., July 4, 1894.

Editor of AMERICAN VETERINARY REVIEW:

DEAR SIR:—In the various reports of post mortem examinations of tuberculous subjects, I seldom, if ever, have read of the lesions being located in the heart. A well marked case came under my observation a short time ago. The subject a grade Jersey, was very much emaciated, unable to rise without assistance. I informed the owner of the nature of the disease, and advised the killing of the cow, which was done next day. Post mortem revealed hypertrophy of the heart, it being about three times its normal size. The tubercular deposits were scattered all through the muscular tissue, and small nodules almost covered the outer surface, the lungs and pleura were also affected.

Respectfully yours,

J. S. SUTCLIFFE, V.S.

REPLY TO FACULTY OF ONTARIO VETERINARY COLLEGE.

Editor of AMERICAN VETERINARY REVIEW:

DEAR SIR:—The following classified and special advertisement appeared with others inserted as reading notices on page 620, *Spirit of the Times*, December 2, 1893, and I deemed it my duty to report it to the "Pennsylvania State Veterinary Medical Association," and will, in due time, bring it before the "United States Veterinary Medical Association."

"The session of 1892-'93. The new session of the Ontario Veterinary College is now well under way, but yet not too far advanced for the accommodation of new students. This college is run in connection with the Agricultural and Arts Association, and is one of the very best in America. Established in 1892, it has maintained a prestige that is beyond compare, because its teachers and lecturers are the very best in the country. For terms, length of course, etc., address Professor Smith, Veterinary Surgeon, Toronto, Canada.

It is evident that the above article is undoubtedly a classified and special advertisement instead of an editorial, notwithstanding all assertions to the contrary. They generally charge about fifty cents a line for each insertion of this style of advertising inserted as "reading notices" among the ordinary printed matter. The above style of advertising is condemned by all reputable medical and veterinary associations and societies in all parts of the civilized world, as it is a violation of the code of ethics.

The session of 1893-'94, Ontario Veterinary College, began Wednesday, October 18, 1893, and closed March 24, 1894. It seems strange that they would have the audacity to publicly advertise for students to enter college forty-five days after the session began, and only one hundred and twelve days before commencement, not deducting any time for the holidays vacation. Would that not make a very short session?

Joseph M. Good graduated at the Mississippi Agricultural College last year, and received his degree of Bachelor of Science, then he entered the Ontario Veterinary College and attended only one session and graduated on March 24, 1894, and received his degree of Veterinary Surgeon from the Ontario Veterinary

College. It would require more than an "elastic imagination" to prove that that was in accordance with Professor Sweetapple's statement about two sessions.

Facts are not falsehoods any more than advertisements are editorials. "A rose by any other name would smell as sweet."

Very respectfully,

JAMES A. WAUGH, V.S.,
Graduate of Ontario Veterinary College, 1882.
Allegheny, Penn.

THERAPEUTIC NOTES.

From some of our medical exchanges, *The Therapeutic Gazette*, *The Medical Press*, etc., etc., we extracted the following recommended preparations as likely to find a beneficial application in our practice.

For Eczema:—

℞. Ol. amygdal. sul.
Glycerini aa. f. 3 iii.
Zinci oxidi, 3 iss.
Mix.

To promote contraction of
fistulous tracts:—

℞. Camphore, ʒ i.
Salolis, ʒ p.
Etheris, f. 3 i.
Mix.

For Burns:—

Olive oil, ʒ ii.
Salol, 3 iii.
Lime water, ʒ ii.

For Granular Conjunctivitis:—

℞. Mercuri oxide, gr. iii.
Zinc. oxide.
Thymol.
Muriate of cocaine. aa. gr. ijs.
Camphor, gr. ss.
Vaseline, ʒ i.

Or again:—

℞. Acidi borici, 3 parts.
Iodoformi, 2 parts.
Aristol, ijs.
Mix.

AMERICAN VETERINARY REVIEW,

OCTOBER, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—

The 31st annual anniversary of the national organization, was held in Philadelphia on the 18th, 19th and 20th of last month, in the amphitheatre of the Academy of Natural Sciences, and though our notice can be but brief, we feel it our duty to call the attention of our readers to that event.

The association having of late assumed entire charge of the publication of the transactions, minutes, papers and discussions, it is not possible for us to do anything better than to ask our friends to have patience and wait until the complete publication is issued.

As far as we can say, however, the meeting was a success. The committee of arrangements had things well prepared and the meeting was officially opened by an address delivered by the Mayor of Philadelphia, Hon. Edwin S. Stuart, to a rather thin audience of the veterinarians of the United States. The meeting then went to regular business, and according to the programme laid out, the report of the regular committees occupied the first day of the meeting. We understood that the report of the committee on intelligence and education was the best that had ever been presented, and that Dr. Carey, (we believe) the chairman, deserved a great deal of credit for the able manner in which he handled the subject.

The second day (the 19th) was occupied with the reports of the Committee on Congress of Colleges, on the Act of Incorporation, and on revision of the Constitution and By-Laws, with that of the nomenclature of swine diseases and hog cholera.

It is certainly necessary that a complete stenographic report of the work of those various committees should be in hand in order to be able to criticise them; to accept their views and consider their plans and suggestions. No doubt it will give us pleasure to refer to them later on.

The election of officers was carried on according to the new amended by-laws, giving us a somewhat larger number of officers. The newly elected members being Dr. W. H. Hoskins, re-elected president; for vice-presidents, Dr. J. F. Winchester, T. J. Turner and W. L. Williams; for secretary, Dr. L. Pearson; for treasurer, Dr. J. L. Robertson.

The paper of "Neurotomy," by Prof. S. J. Harger, was most interesting, as were those of the Committee on Tuberculosis, which were presented by Drs. J. Faust, Leonard Parson and Trumbower.

The paper of Dr. Edward L. Williams on the "Peculiarities of the Diseases of the Rocky Mountain Regions," gave rise to considerable discussion.

The meeting adjourned for a visit to the Veterinary Department of the University of Pennsylvania and to the Zoölogical Garden, and afterwards the association met at the Colonnade Hotel, where they partook of the kind and friendly hospitality of our bretherns of the great Quaker City.

In brief, such is what we can say of the 31st meeting of the U. S. V. M. A. Peculiar conditions, our unavoidable absence from the meeting when we felt we ought to have been present, prevents us from considering it more for the present, and all that we may well say is, that from what we have seen, the 31st meeting of the U. S. V. M. A. has been a success, and that those who were present will always remember the brotherly reception offered by the veterinarians of the Pennsylvania Society.

ORIGINAL ARTICLES.

DIAGNOSIS AND PREVENTION OF TUBERCULOSIS.

By J. F. WINCHESTER, D.V.S., Lawrence, Mass.

A paper read before the Massachusetts Veterinary Medical Association.

It is essential in discussing the diagnosis of tuberculosis to bear in mind that the veterinary surgeon may be called upon to say whether an animal is affected or not, under two very different circumstances. He may, in one instance, be expected to make a differential diagnosis in a case where the animal is noticed to be ill, and regarding which his advice is desired by the owner; or in another animal, as a veterinary inspector, he is expected to recognize the disease, when to the ordinary observer and owner the animal has the general appearance of health. It certainly must be apparent that if there exists any uncertainty in the first of these conditions by a physical examination, how much greater must that difficulty be in the second. In order to illustrate this difference, one ought to bear in mind the lesions found at the autopsy of animals that have died from, or killed as being helplessly diseased, in the first instance; and those lesions of tuberculosis which are found in animals killed for food and supposed to be healthy at time of slaughter, in the second.

The lesions of this malady have a very different distribution when we take account, not merely of the animals about which veterinary advice is sought, but of all cases in which tuberculosis in any degree is brought to light by a reasonably careful post-mortem examination. An absolutely certain diagnosis can seldom or never be made by ordinary clinical methods.

Tuberculosis may be acute or chronic, and the former may run its course in a few weeks, while the latter may last for years. At the beginning of the acute form, and for an indefinite length of time in the chronic, the disease process may be confined to one organ or to one region of the body, and the symptoms will vary according to the time involved.

In all the various forms and seats of the disease, the bacillus may be found in the affected parts. When the lungs are involved in the chronic forms, and the amount of the tissue is not extensive, the animal often presents the general appearance of health with, perhaps, the exception of a slight cough. The diagnosis of such cases by the ordinary physical method, will, as a rule, give negative returns, and suspicion only can be attached to such a case if associated with tuberculous animals. When the lungs become very extensively involved, the symptoms are more distinct and reliable than the general appearance of the animal will assist. The fact that the lung in tuberculosis consolidates in patches with intervening spaces of normal tissues, will aid one to differentiate from many other forms of lung trouble. In the bovine race, when a certain part of the lung is diseased, and that by any means not slight, while at a point beyond that necessary for the required oxidation of the blood, they will fail; the same clinical fact is seen when the pleura is extensively diseased.

The diagnosis of this disease in the digestive tract is impossible in the early stages by the usual method, and it is only when emaciated, diarrhoea, constipation and periodic attacks of hoven occur, that one might be justified in condemning the animal if there are no other associated symptoms.

Occasionally one will see a bovine with chronic hoven and, if associated with tuberculosis, the post-mortem will often reveal an enlargement of the lymphatics at the cardiac portion of the œsophagus, posterior to the diaphragm.

The differential diagnosis of the diseases of the udder is very essential, for it is frequently tuberculous. When simple mastitis is present, you will find diffused swelling of the quarter affected, which is hot and painful to the touch, the milk changes in its physical appearance, and as a rule it responds quickly to treatment. When the udder is tuberculous, the swelling is hard and nodulated, and as has been well said, it feels as though it was full of kernels and seeds, well defined; it is neither hot nor painful, nor does the milk change in a marked degree, although in

a short time it becomes poorer in quality while it may increase in quantity. The external or superficial glands, in many instances, will decide the question of this malady. They are larger than normal, nodulated, and those on one side of the body will not correspond in size to the opposite. Tubercles are sometimes found in or under the skin, and are easily felt in the form of well-defined nodules.

The placenta in tuberculous animals is often studded with small, opaque, well-defined new formations. The bones and articulations are not uncommonly attacked, those entering into the formation of the elbow, knee, hock and styfle joints being most often affected. Lameness is very often marked in some cases, the joints swollen and tense, the ends of the bones enlarged. The diseased bone may crumble, and sharp spiculæ protrude through the skin. The cerebro spinal system is not exempt from its ravages, and tubercular meningitis is not infrequent. The symptoms will vary according to the location, from excitement to stupor, paralysis, partial or complete. Some animals will walk in a circle for days with the head down and to one side. Young animals not infrequently die from acute tubercular meningitis. Paraplegia is seen when the lesions are located in the lumbar region of the spinal cord. It is generally acknowledged that the diagnosis of tuberculosis is no simple matter in any stage, especially where one cannot obtain a history of association with tuberculous animals; then how much more must it be in occult and equivocal cases. Instead of depending upon a physical examination or clinical observation to diagnose this malady, use can be made of the microscope, inoculation or the injection of tuberculin.

The first two methods require special study and considerable time, which is not practical or desirable when a large number of animals are in question, while the third has been demonstrated to be an almost infallible test with proper care and observation. The tuberculin test is based on the fact, as shown by Koch, that it increases the activity of the disease process, creating a general disturbance of the system, which is manifest by an

elevation of the temperature. The minute quantity which will not affect a healthy animal, when injected into a slightly tuberculous one, will, in from 8 to 36 hours, cause a decided rise in temperature. The explanation of this is that the system contains tuberculin produced by the disease, to which the animal has become so accustomed that it cannot be detected by any clinical test. When the small amount of tuberculin used for the test is introduced into the circulation, it increases the activity of the disease process, and as a result the temperature of the body is elevated. From this fact it is evident that the quantity of tuberculin to be used ought to vary with each animal, but experiments and observation have demonstrated that for ordinary size cows, a certain amount (25 cc.) can be relied upon for positive results in occult cases. Cases may occur in which the temperature of a cow will rise after the injection of tuberculin and still the animal is not tuberculous. Any febrile disturbance may set in after the injection, the period of heat or bulling, close approach to parturition, active exertion, exposure, too hot sun, confinement in close building or privation of water.

It is evident from these facts that only the trained veterinarian should use tuberculin, and he must always be on his guard not to mistake any febrile disturbance that might arise other than would occur by the use of tuberculin in the tuberculous. Laying aside these and other causes of error in unskilled hands, the elevation of the temperature should not condemn tuberculin, but stimulate a search for occult tubercles, and a failure will be rare.

There are cases where the animal is tuberculous and the injection of tuberculin will not cause any febrile reaction. In such animals the system is saturated with tuberculin and the small amount injected will not make an impression. These cases are readily diagnosed by a physical examination. A reaction will take place even in the slightest case of tuberculosis by the use of tuberculin, and many of the animals would live for years and might recover. For this reason, when it is desirable to dispose of the diseased animals, or to exclude from a herd

any that are tuberculous, it is indispensable as a diagnostic agent. When tuberculin is properly prepared, it will not injure a healthy animal. That it will aggravate tuberculosis already in existence, is an established fact, and for this reason it has demonstrated its value as a test. Knowing this, it should never be used unless the owner or the government intend to make thorough the work of eradicating the diseased animals.

Tuberculosis has been described as a universal panzotic, and from the deaths in the human subject of this disease, it can well be termed pandemic. This being evident, prevention is certainly the most rational method of making any inroad into its prevalence.

Fleming, in his *Sanitary Science and Police*, published in 1875, under the heading of "Prevention," says: "The only preventive measures with which we are acquainted are those of a hygienic kind: proper food and water, sufficient exercise in the open air, clean, dry and well ventilated, but not too cold stables, and keeping the cattle from undue exposure to severe weather. As there is reason to believe that the malady is hereditary, cattle having tendency to it should not be bred from.

As the experiments which have been conducted by most competent authorities have demonstrated that tuberculosis can be induced in animals by feeding them with tubercular matter, care must be taken that this is not given to them as food. There being much reason to believe that the disease can be transmitted by co-habitation, whenever cattle show any tendency to it, they should be isolated from the healthy, and every precaution observed with regard to preventing contact. Animals slightly affected should be fattened and slaughtered, and their flesh, if *free* from traces of the disease, may be utilized. The milk of such animals should be proscribed, and in advance cases, the flesh also."

It is readily seen from this quotation that the requirements for protection against the disease, either in man or animals, are the same. It can be concisely stated in the word hygiene. I doubt if any one will take exception to the statement that sun-

light, combined with cleanliness, proper drainage and ventilation, is necessary to maintain and create a constitution capable of resisting disease. Tuberculosis is an infectious disease, and with the means we have to diagnose this malady, there cannot be any excuse why the products of tuberculous animals should be used for the benefit of man.

In a brochure issued by the State Board of Health of Massachusetts (May, 1894), it is admitted that the milk from tuberculous animals is a menace to the health of mankind, and it should be proscribed. In regard to the meat of such animals, they recommend its thorough boiling, although they do not feel confident that it will cause the disease, since clinical evidence to that effect is not in existence. Since tuberculosis is a preventable disease, undoubtedly there are cases that will recover. This being a fact, why allow or sanction even the use of tuberculous meat, when it is known that the ptomaines or tuberculin which exists in the flesh of tuberculous animals is not destroyed by boiling, and if introduced into the system of a tuberculous individual, will excite the activity of the disease. It is not desirable to ameliorate a case of tuberculosis after the possibility of prevention has passed. It is admitted by the producers of vaccine virus that the bovines that are used for its production should be in a normal condition, and that for this reason they are examined, by a veterinarian in some instances, and at other times by a supposed to be competent man.

In an article in the *Boston Medical Surgical Journal* for May 3d, on production of vaccine virus, no evidence is shown that tuberculin is used. Then of what value can be an opinion as regards the existence of tuberculosis in occult form. One firm uses mature animals in order that the lymph may be richer in germs, while the other (of the two firms examined) use young animals that are less liable to be diseased. In neither of their establishments does it appear that the product of each animal is kept by itself, and the animal killed allowed of an examination to establish the fact of its normal condition.

In conclusion, let me congratulate the State Board of Health

on its bulletin, as a step in the right direction for the prevention of this, the most universal and insidious of all diseases in the animal kingdom.

Authors cited: Makenzie, Law, McFadyean, Saunders, Robertson and Billings.

PREVALENCE OF BOVINE TUBERCULOSIS.

BY AUSTIN PETERS, D.V.S., Jamaica Plains, Mass.

A paper read before the Massachusetts Veterinary Medical Association.

MR. CHAIRMAN AND GENTLEMEN:—I have been invited to open the discussion of the subject we have taken for consideration this evening by saying a few words upon the prevalence of bovine tuberculosis, and in doing so I shall be as brief as possible because we have a number of interesting speakers to listen to, who will call your attention to this question from different points of view, and also because it is very difficult or almost impossible to obtain any reliable figures showing its frequency among our neat stock.

Tuberculosis has been known for all time and among all civilized people, and among all habitable climates; among cattle keeping people it is known among their bovines, and while it continues to exist among the human race, it will prevail among their cattle, its prevalence among the latter depending upon how they are kept, where they are kept, what they are kept for, and upon the susceptibility of certain breeds or the constitutions of certain individuals.

Among the human family, as well as among the ox tribe, has Pharaoh's dream been constantly repeated, from the days of Joseph to the present day, the seven well favored, fat-fleshed kine have been devoured over and over again by the seven ill-favored and lean-flesh kine, which I have not the least doubt were suffering from tuberculosis, and it is not even necessary to have the seven ill-favored and lean-fleshed kine to devour the seven healthy ones, for if a single tuberculous cow be placed in a dark, badly ventilated stable, with the seven well-favored ones,

kept under unhealthy surroundings and forced to an enormous yield of milk, this single, ill-favored and lean-fleshed individual, will in time succeed in devouring the seven well-favored ones, notwithstanding the fact that the milk from this herd yields the greatly to be desired 13 per cent. of total solids, yet will there be "death in the pot," or rather the milk-can, "consumption at eight cents a quart," or cholera infantum at the same price, or a pleasing mixture of the two commodities combined.

Admitting that tuberculosis is due to a specific germ, the *bacillus of tuberculosis*, and that it can be communicated from one animal to another of the same or a different species, by means of the expectorations after they become dry, or by the consumption of the flesh and milk, or dairy products of tuberculous cattle, yet in order to appreciate the danger to human beings from the use of the dairy products of tuberculous cows, it is important to have some idea of its prevalence.

It is an impossibility to get any statistics to show the extent to which this malady exists among our bovine population, but I think I can show that it is of sufficient frequency to be of very great importance from a sanitary and economic standpoint. Fleming, in his *Manual of Veterinary Sanitary Science and Police*, in speaking of the geographical distribution of this disease among animals says: "Tubercular phthisis, or tuberculosis probably prevails among the domesticated animals over the entire globe, though its frequency will depend upon various external influences, as well as the constitutional tendencies of different species and breeds. In some countries it is enzootic and very destructive. Such is the case in densely populated districts and in unhealthy climates, or in regions where animals are improperly fed and housed. In Mexico, for instance, it is very common, and causes much loss, about 34 per cent. of the animals slaughtered for food being found affected. In Europe, particularly in the cow-sheds of the large towns and cities, it is extensively prevalent; and in this country (meaning England) it has long been recognized as a common disorder among animals, but more especially as affecting the bovine species."

Walley's "Four Bovine Scourges" considers contagious pleuro-pneumonia, rinderpest, foot and mouth disease and tuberculosis as the four great cattle plagues of the world.

In this country rinderpest is unknown; foot and mouth disease does not exist at present; contagious pleuro-pneumonia has been stamped out in every locality in the United States where it has ever existed, so that to-day we can safely say that the only one of the four great bovine scourges staring us in the face and challenging us to combat, if we are not afraid to grapple with it, is tuberculosis.

During the past four or five years many of the states, particularly in the East, have been aroused to take steps to eradicate tuberculosis from among their neat stock, chiefly by having the work attended to by cattle commissioners, and while numbers of cattle have been examined, yet as a rule the work has not been done in a way to give any idea of what relation the number of diseased cattle bear to the number of healthy ones, or what the ratio of herds where the malady exists is to the herds where the creatures are all healthy.

During the winter of 1892-93 the New York State Board of Health, having been empowered to regulate the matter of bovine tuberculosis in that state, undertook a farm to farm inspection of the cattle in two dairy districts with a view of ascertaining about the per cent. of tuberculous cows in a certain region. In lower Westchester County approximately 10,000 herd were examined, and in the neighborhood of 80 were destroyed as tuberculous, or 8 per cent. In Orange County, in the neighborhood of Monroe, about 10,000 herd of cattle were examined, and 35 were killed as tuberculous, or 35 per cent.

In testing herds with tuberculin, I have found that by means of the old-fashioned physical examination, about one case out of three present could be picked out, that is after diagnosing the cases present in a herd by means of a physical examination, and then testing it with tuberculin, three animals will react to everyone found by means of an ordinary diagnosis. Taking this for granted, it is safe to say that among the herds of the

farmer's in a district like Orange County, which somewhat resembles Westchester County, that about 1 per cent. of the cows are tuberculous, these herds being made up largely of hardy grades of the Ayrshire, Holstein and short-horn families.

In Westchester County, nearer New York City, where more cattle of the Channel Island breeds are found, and the system of dairy farming more nearly resembles the milkmen's management on the outskirts of our large towns and cities in eastern Massachusetts, it is safe to say that between two and three per cent. of the cows are tuberculous, allowing that only one case can be detected by means of a physical examination to three that will show a well-marked reaction to tuberculin. These figures compare quite evenly with the abattoir statistics of many of the cities of France, Germany, Belgium and Holland.

In eastern Massachusetts we have no exact figures to give us statistics, but it seems to me that bovine tuberculosis must be much more frequent here than even in Westchester County, N. Y., or else I have been unfortunate enough to be called to see so many herds where tuberculosis exists, during the past winter, as to prejudice me into this belief. Since December 1st I have had occasion to examine 500 head of cattle in eastern Massachusetts, of which 75 have been tuberculous, but then, of course, I am very likely to be called to examine creatures where the presence of tuberculosis is known or suspected.

As to the prevalence of tuberculosis among cattle of various ages or sexes, abattoir statistics show it to be very rare in calves killed for veal. It is seldom seen in steers and oxen killed for beef; in fact, it is almost unknown among our western beeves. It is seen chiefly in cows slaughtered for food, and is met most frequently among dairy cows from the outskirts of large cities and towns: here it is found more among the older cows, the lesions being much more readily found in cows over six years old than among those younger. That is, overcrowding in unsanitary stables and the depleting influences of lactation are the two great predisposing causes. Among certain fancy herds of pure-breds of different breeds tuberculosis exists to an alarming

xtent, but this is because some of our breeders have nurtured this malady as carefully for years as though they were trying to breed tubercle bacilli instead of cattle.

In Massachusetts our system for dealing with bovine tuberculosis is faulty. In the first place, this is a commission-ridden state: everything is managed by commissions of three or four men. It is a well known fact that an army with three generals would meet with defeat; a ship with three captains would meet with disaster; a railroad with three superintendents would go into bankruptcy; and yet that which would bring defeat in war, disaster to commerce and bankruptcy in business is expected to work successfully in the affairs of an over-taxed people. These are the views of Seth Low, President of Columbia College, and Gamaliel Bradford. The only possible excuse for such a system is that it furnishes salaries for a lot of played-out politicians and impecunious lawyers, instead of placing the management of affairs in the hands of single responsible heads directly accountable to the appointing power.

Another criticism of the present state of affairs is the system of town and city cattle inspectors. One city or town may appoint a competent veterinarian to such a position—these instances are rare—a few more cities or towns may appoint an incompetent veterinarian, who is but a very slight improvement over any other ignoramus, but in most instances the appointees are men of no special qualifications for the positions they hold; their examination of herds are farces, and the certificates they write are not worth the paper they are written on.

I am in favor of having a state veterinarian who shall be responsible either to the State Board of Health or to the State Board of Agriculture, depending upon whether this subject is to be considered most important from a public health or an agricultural point of view, then divide the states into districts, say ten or a dozen in number, and appoint the best veterinarian in that district (that is, the best cattle practitioner, as the best horseman is not always the best cowman); district veterinary inspector to act under directions from the state veterinarian.

Furthermore, owners of animals suffering from contagious diseases should be reimbursed. The co-operation of farmers in eradicating bovine tuberculosis will never be secured until this is done. There should be also an arrangement for utilizing the meat of slightly diseased cattle for food, and the proceeds of these sales should be used for helping to pay the expenses of this work. It is an outrage to destroy a man's property without paying for it, and absurd to say that tuberculous cattle are not property.

The relation that the use of milk from consumptive cows bears to the malady in mankind will never be known until thorough steps are taken to prevent its use. If all the tuberculous cattle in the state were killed to-morrow, and infected stables burned, there would be a fresh supply in a few years from the contamination of consumptive persons, unless boards of health and physicians are ready to look upon it as an infectious disease, call it thus in annual reports and vital statistics, and take steps for preventing its spread from person to person, and from mankind to cow. If we start a crusade against the poor cow, without taking any other precautions to guard against it, we shall be simply continuing to prevent a waste at the spigot while there is a big leak at the bung.

Sterilizing food is a safeguard to the public health, while on the other hand, there is the economic standpoint of great importance to the farmer, of protecting healthy from diseased cows.

I suppose that what I have said will lead to the hue and cry that "the horse doctors want a pull at the public crib, but they shan't have it" so long as there are any fossilized politicians, unsuccessful lawyers, or even decayed labor leaders to be provided for; but let me remind you that a capable veterinarian can make more in private practice than the salaries usually paid by the state amount to, and as I generally give my texts at the end of my sermons instead of the beginning, I will simply suggest to you, "to render under Cæsar the things that are Cæsar's, and unto God the things that are God's."

SANITARY CONDITIONS OF DAIRY FARMS.

BY J. M. PARKER, D.V.M.

A paper read before the Massachusetts Veterinary Medical Association.

In a paper read before the American Medical Association in 1891 on "The Treatment of Chronic Pulmonary Consumption," the essayist remarks that "our surroundings make us what we are. If our treatment could begin with the birth of the patient, in 99 per cent. of cases we should not have any tuberculosis to treat. *No matter about the family history.*" This remark applies equally well to the dairy cow. *Their surroundings make them what they are.* And I venture to assert that, if the sanitary and hygienic conditions were what they should be, we would have little or no bovine tuberculosis in our dairy herds. It is the common every-day life a person leads that governs his health; and it is the common every-day life the dairy cow leads that governs its health and vitality. *Their surroundings make them what they are.*

Sanitary science has made vast strides in the last twenty years, yet our dairy farms are in practically the same condition they were in fifty or one hundred years ago. In fact, no effort is made on the average farm to conform to any sanitary laws or regulations whatsoever. The old barbarous practice of confining the cattle in stanchions is still in use; and the old barn and barn-yard, with its strong, odorous and slimy filth, is still in existence.

Sanitary science is advancing every year. Our cities are well drained; our drinking-water is carefully guarded; houses and schools must have sufficient light and air; our young men and children must have exercise; but yet our dairy cattle are expected to retain their health and strength and to maintain their vitality, shut up for months in close barns, without ventilation or fresh air, and with little light. Compelled to stand in their tracks unable to move—unable to turn round even to lick their sides.

It seems strange that the *entire* question of the sanitary

improvement of our dairy farms should have escaped notice as it has. It is not a new subject. For many years past authorities have discovered that the principle predisposing causes of tuberculosis are poor sanitary and hygienic conditions, and yet, notwithstanding the universal prominence given to sanitary conditions as predisposing causes, they are almost entirely ignored among the prophylactic measures suggested by many of these same authorities.

As showing that sanitary conditions are not observed as they should be on dairy farms, I have attempted to tabulate the conditions as found on twelve farms in this vicinity. These are not picked out, but are taken at random from farms visited from day to day. The table shows roughly the amount of cubic space per cow; the ventilation, light, water supply; whether there is a cellar, with its condition, and how the manure is disposed of.

No.	No. of Cattle.	Cubic Space per Animal.	Ventilation.	Light.	Water.	Cellar.	Manure. How disposed of.
1	7	465	none.	poor.	city.	yes.	cellar.
2	10	286	"	"	spring.	no.	outside barn.
3	1	440	"	none.	city.	"	"
4	6	224	"	poor.	spring.	"	"
5	4	143	"	"	"	"	"
6	7	800	stairway.	fair.	"	yes.	cellar.
7	7	416	none.	good.	well.	"	"
8	12	487	"	"	"	"	"
9	19	1,165	good.	fair.	"	"	"
10	3	266	poor.	poor.	"	"	"
11	3	1,336	none.	good.	puddle.	"	"
12	12	233	"	"	spring.	"	"

You will notice as a rule the cattle are far too crowded. In the city of Boston each animal must have 1,000 c. f. of space, and probably, with good ventilation, that may be sufficient; at any rate, it is an immense improvement on many farms in other parts of the state; but even 1000 c. f. is altogether inadequate if there is no ventilation. What must be the conditions of the barns then, when as in No. 5, there is only $143\frac{1}{4}$ c. f. for each animal, with no ventilation. In only three farms out of the twelve, you will notice, is there any attempt at ventilation,

and even in these it is more in name than fact. And in not a single barn that I have been in is there any provision made for the admission of fresh air.

Of the twelve barns visited four had good light, two had only fair light, five had very poor light, and one had no light at all.

As a rule New England farms have good water, but on some farms the wells are situated too near the yard and receive the surface drainage, and, in some instances, the cattle are even watered in creeks and puddles formed by surface water.

Keeping the manure in the cellar is another common practice. In eight of these twelve barns the manure is kept in this way. At the farm referred to as No. 8, there are twelve cows, each cow with 487 c. f. of space. This barn is well lighted; the windows facing the south, but there is no ventilation whatever except when the door is open. This farmer makes a special boast that his cattle are not out of the barn from fall to spring. They are watered in the barn, and the manure is dropped into the cellar below, where it is allowed to remain till removed in the Spring. In making a visit to this barn during the winter, a man who was with me had to leave the barn because of the foulness of the air.

At another farm, No. 2 and 4, there are two barns. In one containing ten cattle, each animal has 286 c. f. with no ventilation and only one small window for light. The other barn has six cattle, each animal having 224 c. f. This one also is without ventilation or sufficient light. In these barns the air was very bad.

At No. 5 there is no ventilation and only one small window for light in this barn; each animal had only $143\frac{1}{4}$ c. f. Two out of four animals were evidently tuberculous.

At No. 10 three cows are kept in a tightly boarded pen 10 x 10 x 8 giving about 266 c. f. to each animal. At this barn there is a small ventilation and one small window, but in winter when everything is tightly closed, the atmosphere is fearful.

The other day I visited a barn, No. 11; and in conversation with the owner, I asked him where he watered his stock? "In

a puddle outside," he answered. The puddle was a marshy place where the water lodged in wet weather. It was situated about twenty yards from the barn and formed part of the yard. The manure pile was on sloping ground at the side and drained into the puddle.

At No. 12 there are twelve cows, each having 233 c. f. with no ventilation whatever, the farmer taking special pains to have a heavy canvas curtain in front of the cows. This is a fearful hole in winter time, and it has the reputation of being the hottest barn in the district. This farmer is said to lose three or four cows every year.

No. 3 is a small shanty in the city with neither window nor ventilation. The water is carried to the cow, and she is in the barn winter and summer. Inside the barn is terribly filthy.

At another farm (The State Experiment Station of a neighboring state,) the barn is so close and hot in winter that a friend of mine, who was visiting there, had to leave and go into the open air because the hot, foul air in the barn made him sick and inclined to vomit.

These, gentlemen, are common examples of the average New England farm. Farmers have been taught to do these very things that are injurious to their stock. They have been taught to keep the manure in the cellar. What is the result? You have a damp, chilly atmosphere, full of foul odors and organic impurities. They have been taught to keep the barn close and warm, and the only heat it gets is from the animal body. The hotter, they think, the better it is.

In the great majority of dairy farms there is not even a pretence of ventilation, while the cattle are packed in as close as they can conveniently be put. A cow has about four or five times the lung capacity of a man, yet, in many of the farms, each cow has only a tithe of the space required by a child under seven years of age, and that without any ventilation.

Fresh outside air contains only a trace of CO_2 , about four parts in 10,000. The air of a room would be only fairly good with eight or nine parts in 10,000, yet some barns have as much

as fifty or sixty parts of CO_2 in 10,000, and, I have no doubt, if the percentage was taken during cold weather in winter, when the barns are tightly shut up, the air would be very much worse. When only a small quantity of CO_2 is contained in the air, the CO_2 in the lungs is readily diffused through the atmosphere; but when that atmosphere has become impure, when it contains a large amount of CO_2 with organic impurities, then the CO_2 in the lungs is not so readily diffused through the air; it has found its level and is retained in the system where it lowers the vitality, causing the dullness and lethargy experienced by any one after sleeping all night in a close room.

In calculating the amount of impurity in the atmosphere of a barn, the CO_2 is taken as a standard of impurity, only because so far no simple means has been discovered by which the other impurities can be determined, so that the amount of CO_2 shows only relatively the amount of impurity in the air.

When a ray of light penetrates a dark room, innumerable particles are seen floating in the air. These particles of so-called dust are organic matters given off by the occupants of the barn as well as fungi, bacteria, dried manure and particles of hay and grasses. It is this dust that is so dangerous as a source of infection in tuberculosis. The manure, as pointed out by Billings, contains the bacilli; when dry it becomes pulverized and powdery, and, along with the discharges from the nose, it mixes with the dust and chaff and the other impurities in the air which are breathed by the cattle. Ventilation, which should rid the atmosphere in the barn of these impurities, being altogether lacking.

Drainage, dark and damp cellars under the barns have a close relationship to the ventilation and warmth of the barn. The wet and filth usually found in a cellar, keep the air of the barn damp and chilly; while the decomposing animal and vegetable matters give off a quantity of CO_2 which contribute largely to swell the amount already in the barn.

The cellar is considered by many farmers to be a necessity. There the manure is kept; there odd tools and implements are

stored; and if the barn upstairs get too crowded, one or more animals will be turned into the cellar. It is always dark and damp; the sunlight never penetrate there; the manure is thrown down, the liquid portion runs along and soaks into the ground; in many cases it is a little lower than the yard, and more or less of the surface water flows into it. It is never drained; usually it is damp and wet all summer; the ground only dries by evaporation; and, according to Prof. Kedzie, "To evaporate one pound of water consumes enough heat to raise the temperature of five and one-half pounds of water from freezing to boiling point." Or to vary the illustration: "Suppose that a tile drain discharges constantly for a day a stream of water whose cross section is one square inch and velocity two and one half miles an hour, *this one day's drainage would save the heat equivalent to nearly six tons of coal.*"

Further, we must remember that barns are usually warm; this warmth causes a current of air upward, so that this damp, chilly air is drawn up into the barn above, where it does the most harm.

In referring to this condition Prof. Kedzie forcibly remarks: "*The evaporation* of so much water renders the air over such a soil *damp* and chilly." This result is a physical necessity. This damp and chilly atmosphere has a more serious result than the simple feeling of discomfort. It has a most depressing influence on the human system, lowering its tone, enfeebling the vital powers and acting as the predisposing cause of a long list of diseases, some of them the most destructive and incurable known to the medical profession. The depressing influence of the dampness and chilliness of a water-soaked soil is not to be compared to the effect of an occasional wetting, as when we are caught in a shower, the chilly dampness of the undrained soil is persisting and unremitting, dragging us down with its cold fingers at all hours, at "noon of day and noon of night," as if we toiled and rested, waked and slept in a perpetual drizzle of cold rain. It may seem a small force at first, but its persistent, untiring and relentless pull, tells upon the strongest at last, like the

invisible fingers of gravity, which finally drag down all to a common level. This depressing influence is not developed suddenly and distinctly, but silently and secretly the sapping and mining go on till the explosion comes in sickness, suffering and the sleep that is eternal. (N. H. B. of H. page 216.)

If it is necessary to have cellars then it is most essential that they should be well drained, well lighted and well ventilated, and the manure instead of being dumped into the cellar should be carried some distance from the buildings. Care should also be taken that the well is not situated so as to receive the surface drainage. Too often the well is situated in or near the barnyard, and I have known cases, where through either ignorance or carelessness, the cows were watered from a puddle or hollow near the barn into which the surface water from the barnyard drained.

Light is another essential that is almost neglected. Good light is just as essential to the health of the "higher animals as it is to plant life." We ordinarily get too much in the habit of viewing light in barns as being simply for the purpose of enabling us to see what we are doing. Light, however, has a direct bearing on the health of the body and an even more direct influence on the causation of this special disease under consideration. Light is especially necessary, where through want of exercise, the circulation is sluggish and the system is depressed, light will stimulate the circulation. It increases the oxidation; more co₂ is given off and the functions of the whole body are quickened and enlivened; but sunlight also retards the growth of germ life, and, more than that, the vitality of certain forms of bacteria, including anthrax and tubercle bacilli, is destroyed by the action of light. So that while light is necessary for the healthy development of the higher forms of life, it is detrimental to the lower forms of life. And yet in how many barns are we able to see distinctly. In how many barns can we see to read a thermometer without going to the window.

Nor are the above the only conditions that tend to impair the health of the dairy cow. On the average farm no care is taken,

not a single precaution is observed to prevent the health of the dairy cow from breaking down under the strain to which it is subjected. Everything is made subserviant to the one sole and single object of getting a large milk supply.

One would think that common sense would teach that cows kept for months without stirring out of tracks, is, to say the least of it, an unnatural condition of things. Exercise is just as necessary for a cow as it is for the rest of the animal kingdom, yet it is something the dairy cow does not get.

Everyone knows that exercise increases the flow of blood to the muscles, and, in consequence of the greater amount of waste products carried off and the greater amount of oxygen required by the system, a quickening of the hearts' action and a quickening of breathing result. On the other hand, when little or no exercise is taken, the circulation becomes sluggish; the heart, like any other muscle, degenerates for want of use. The breathing becomes shallow, and the lungs are not expanded. When any extra strain is put upon them they are not able to do their work, and we have rupture and permanent dilation of air cells, along with weak lungs and a predisposition to pulmonary disease.

Exercise, on the other hand, causes an increased flow of blood to the lungs with an increased vitality and strength. The increased flow of tidal air in and out of the lungs will tend to prevent the slow growing tubercle bacilli finding lodgment and in this way prevent its growth and development in the lungs.

In referring to exercise, I don't wish to be understood as advocating a large field or range for the cattle to run over. I don't wish to advocate anything impractical; but I do think that the present method of confining the dairy cattle with stanchions is capable of improvement. I do think they ought to be allowed their liberty; and, further, I do not see anything impractical in any such suggestions. Any condition that affects the comfort of the animals, must affect their well being. Every one here must have seen how cows will rub and scratch themselves when first let out for water; often, even when thirsty, they will not touch the water till they have first licked themselves all over. It is

impossible to stand behind a row of cattle for five minutes without seeing one or the other make a more or less ineffectual effort to scratch the body. No animal can be comfortable confined as they are in New England at the present time.

Everyone knows that these conditions exist and are detrimental to the health of the animal. Then why are they not attended to? It is because through force of habit we have got accustomed to them we take it for granted that they can't be improved. And, gentlemen, until we pay greater attention to the common every day life of the dairy cow, we will never reach the true solution of this momentous question.

"Their surroundings make them what they are."

THE VETERINARIAN'S RELATION TO CLIENT.

BY T. B. POTE, D.V.S., Terre Haute, Ind.

A paper read before the Indiana Association of Veterinary Graduates.

In this paper, gentlemen, it will not be my endeavor to present to you any startling scientific views, or practical ideas from a medical point, but to portray to you in a straightforward way another side of our work as veterinarians, *viz.*, that of the veterinarian's relation to client. The very importance of this relation is seen when we look among our professional brethren and note the rapid progress of some, while others, equally as good, and sometimes their superiors, are slow to gain that for which we all strive—a practice. Whether this power is some form of magnetism or not, it cannot be said, but it is one that can be cultivated to a very great extent, and it behooves us as servants of the people in this line, to make a close observation of our clients and the people we are among, to make a close study of them and the impressions we are making upon them. More especially is this importance of relationship presented when we see that the veterinarian in the minds of many people is not classed as a man of learning in his specified line of medicine, a man deserving the confidence and respect of an educated man as is usually given men of other professions. But instead there

still exists among many the old idea of a veterinarian being a common "hoss doctor," the extent of his knowledge being limited to a few secret receipts and an immense store of faith cures. At this date, however, we are rapidly progressing from this state in the minds of the people, but still there are many who hold to the belief handed down from previous generations. To eradicate these false ideas from the minds of the general public, there are many little points worthy of discussion, and many wherein we betray our profession in not conducting ourselves in a manner becoming professional men.

The professional man is naturally expected to be neat in appearance, and showing a pleasant and agreeable manner, for, while these may be considered little things, they are nevertheless points upon which many pay very little attention, and as a result, are wrongly judged by the people. Even in conversation, one often says something that may give rise to a severe criticism or the poor opinion of some one for years to come. We should seek society, and good or none; and to promote self-interest, it should be the best or none, for no one would question whether mingling with educated people has an elevating effect on the young man in his career. The mingling with people of culture and learning will prove far more advantageous than the hour spent in talk with horse jockeys or loafing around livery barns. While we wish the good will of jockeys and all people, still we must hold ourselves up, or even they will not respect us as they should.

There is a gifted way possessed by many of our brethren by which they are always on their dignity, and are highly respected by everyone, and it is this feature we all should cultivate. Socially, the veterinarian in his life can do no better than copy the professional bearing of the human physician. He in general is a man modest and dignified in bearing, having the reverent respect of all. He does not seek the gaiety of society, but when in society he is interested in intellectual people, and thereby gains the highest esteem and confidence of all those whom he comes in contact with. By our choice of company we show

to the public our estimate of self, and does the public more than reflect the estimate of self when it judges us by our associates?

In the mingling with the less intellectual class, I do not mean to say that we should ignore them or fail to show them every courtesy, but that we must not seek their company in preference to the more intellectual. At all times they should be treated with the greatest respect and politeness, and with this we can command their highest respect and still command our dignity, but just so soon as we breed a familiarity with this class, just so soon do we lose the confidence they may have placed in us. To this class, as well as all others, a cheerful and courteous manner should be cultivated, avoiding the cold and cheerless manner so often seen in the business man.

To all people appear only in the character of a veterinary surgeon, and make every reasonable effort to satisfy all professionally, and you are soon rewarded by being a popular man in your chosen vocation. Before everyone cultivate a professional manner and spirit, and conduct yourself in such a manner that you will have the confidence of client and the respect of our fellow-men. For the advancement of any profession, and especially of ours, we, as members of the veterinary, should pay some attention to our side subjects, so that we may be able to converse upon any subject easily and intellectually. We should improve ourselves, so that in our intercourse with people, we may readily impart to them the fact that a veterinary surgeon has some knowledge and claim to the title of a professional man.

In the presence of clients, they being made up of persons of various moods and minds, requires a very close observation to treat all in a manner satisfactory to ourselves and client. Make a study of mankind psychologically, so that when a man enters your office, you may at a glance be able to know the disposition and character of the man whom you are confronting; your client, as he enters your office, receive in that manner which will relieve him of any embarrassment and make him feel easy in your presence. As he presents his case to you, show a deep interest in it, and endeavor, by a thorough questioning, to reach

the facts of the case. The aid to self in questioning both in diagnosis and prognosis, no one would question, and as to the client himself, it cannot but give a feeling of the interest and ability of the man whom he consults. Only too often the veterinarian, as well as the human physician, asks a few questions of his client, jumps at conclusions and prescribes. This can have only the effect of the client feeling that enough care has not been used in his case, and he loses confidence, especially if the case does not do as he would want it to do. The client comes to you for benefit and expects your best endeavors in aiding him. Therefore, if you would gain his confidence and co-operation in treating the case and his recommendations, show him every courtesy and a deep and careful interest in his case.

The veterinarian's office should be in a good neighborhood and appropriately furnished. The office is well displayed in appropriate pictures, diplomas, etc., and by all means the display of a good library. This is of the utmost importance, being at hand for ready reference, and impressing the client with the fact that you are a reader of your profession and one who keeps abreast of the times. A professional man, be he lawyer or doctor, if he in his leisure hours from practice is seen in his office reading or occupied with some work pertaining to his profession, will soon be known abroad as a man well informed in his line, and no higher compliment, or one more beneficial professionally, can be passed. Let your library be conspicuously placed, and make a handy reference to sustain you in any important point that may be brought up to raise yourself in the estimation of your client.

The decorations of the walls of office with engravings which, besides being ornamental, may be used as explanatory figures, such as a diagram of defects and unsoundness of horse, chart of the circulation, the superficial anatomy of horse, etc. All these things the human physician has long ago realized the effects of on his client, and we should make such an improvement and gain thereby. The display of pathological conditions is perhaps best kept from general view owing to the fact that great import-

ance is placed upon their display by quacks. However, they should be near at hand, that they may be used to explain conditions more fully to client. An explanation by the use of pathological conditions which apply to case in question before client, is very useful and has much to do in making a good impression upon client. You gain his confidence thereby, and should case not terminate successfully, he is not prejudiced against you and will give you the benefit of the fact that the best veterinarians are not capable of saving every case.

Having reached the point of making visits to patients, what has been said in reference to relation of veterinarian to client in office holds equally good here, added to it the fact that we are in the presence of patient, and our position to be more guarded. In coming before patient we should *always* make a general survey of our patient's condition before proceeding to make our examination. Before making examination gain as full a history of case as possible from owner or attendant, which will often prevent you from making some embarrassing blunders before client. Proceeding to the examination, go about it in a systematic way: one which will indicate to your client that you are fully competent and understand what you are about. After duly weighing all evidence in case, be quick to make diagnosis. Be firm in it, and should your client request a diagnosis, give it, but guarded in all uncertain cases.

For our advantage before client, it will be found best not to give prognosis unless it should be in those cases where death is positive or a cure is beyond a doubt impossible. Give prognosis only in cases where it can be verified by patient's condition in a very short space of time. Should the veterinarian be urged to give prognosis in doubtful cases, he can modify it somewhat by giving his opinion or his belief, and by such you will satisfy client equally as well, and find yourself in a pleasanter position should patient go contrary to your opinion of it. Ever be on the look-out for the preservation of your reputation. Many times we are called upon by people to give our opinion in cases where we are not expected to be paid, and of course expected

to give our opinion to client just from general appearance of case. In such cases the veterinarian is always the loser, he realizing no profit from it, while owner has his opinion, and should the veterinarian prove incorrect, he is quoted as such before others and at his injury to reputation. In our examinations of patient we should never show in any way that we are not able to just make out the case. Always give an opinion, in defence to yourself. Show no sign that you see unaccountable conditions. These occur to every practitioner, and often being transitory, amount to nothing, and especially of no advantage to client. In the young practitioner, only too often in his extreme honesty he, by a casual remark, informs attendant and bystanders that it is his "first case," or the "first case he ever saw just like it." Such remarks only affect the veterinarian in the mind of the client and does no good in any way.

The veterinarian, in defence of his reputation, must use every precaution in giving opinions, and especially in those cases above mentioned, where the gain, if any, is to client and none to the veterinarian. When prescribing for your patient, do it in detail, and in your orders to attendant make them definite and precise. Order medicines given promptly, and on your second visit to patient, before proceeding with your examination (which should be carried out in detail and with as much carefulness as before), learn if medicines have been given as directed and other orders carried out as given. Afterwards proceed with examination, but it is very important to learn if your medicines have been given before giving an opinion of case. To exemplify this, we often enter the presence of our patients, and seeing a marked improvement remark such, afterward asking if our remedies have been given, we are informed that they have not. Thus we are placed in an embarrassing position, and have been shelled out of our own fort.

Knowing in advance that our directions have not been carried out, we can guard our opinion of case, and protect ourselves even if our medicines have not been given as ordered.

Be prompt in making your calls, even to the time of day you

call. After having done all necessary to your patient's welfare, depart and make it known to client or attendant just when you will call again. Avoid over-visiting your patient, for fear your client will suspect that you are more interested in your fee than the welfare of patient. In practice we often meet with people who wish you to insure the success of case. For your own good merely inform them that your reputation is at stake, and that you will do your duty, but if he insists upon such an assurance, and it is a case where your chances are good, charge him an extra fee and take the risk. Usually, however, it will be found much more satisfactory to the veterinarian and client to each take his share of the risk.

By the position of that of the stableman and attendants, it makes our relation with them very close in a way. Considering that it stands us in hand to be very careful in our treatment of them, showing them every courtesy which we show the owner. It is important that we should give them no offence in any way, and try to always have their good will. Some will throw away the medicines prescribed, or do anything to block the success of a practitioner whom they dislike. They are men, besides, who are in a position to assist us very much by saying many little things complimentary to us in our profession.

The subject of consultation, at first thought, may not appear on this subject, but it does, in the way of bestowing confidence in the attending veterinarian, should he see fit to call in some practitioner. The display of brotherly feeling has much to do in establishing confidence of the client and public in any professional rank. Should client request, or you deem it necessary, consult with some fellow practitioner. The man consulted is more than likely to agree with you; at least if a gentleman will protect you in his opinion of case, and you are the more thoroughly established in the confidence of client. If the practice of consultation was more commonly brought into use, there would be far better feeling among members of the profession, and the public would see us in another light. Instead, however, we have a bone of contention among us, and usually

see veterinarians disagreeing on cases if possible through a jealous motive where they are not consulted in case or interested in it in any way.

There are often cases where consultation in a case is very advisable and necessary. In the first instance, you are sometimes called to a case where there is an animal very dangerously ill, or perhaps no chance of recovery. The owner's confidence perhaps wavers, and here, if consultation be had with some good man, your views are sustained, and client's confidence in you more thoroughly implanted, from the fact that some other person of the profession has coincided with you in your views.

In the second place, often there is some obscurity in the case, and as no two men may see a patient's condition in the same phase, the result of a consultation may lead to a slight change in treatment which may benefit patient.

The consultation should be conducted in a way becoming professional men, and thus bring the veterinarian before the client and public in the true light. In consultation where you have been consulted, never see patient afterward, unless in company with the attending veterinarian. Do not seek to rob him of his client, and if the owner should request you to see patient again, it is better to refuse to do so unless the attending veterinarian has been discharged. It is far better to lose a fee than to gain the ill-will of some competitor. For the profession, it would be far better to give your competitor a good word or none, rather than give any expression of ill-will, which can have only the result of lowering the profession in the estimation of the people.

The collection of bills is one which proves itself a great stumbling-block to many practitioners, especially the young man in his early career. Its bearing upon the relation of the veterinarian to client will be seen, when we consider that oftentimes the very success of a young practitioner depends upon his success in this line. The veterinarian, besides being a professional man, must find that he must be a business man also; the presentation of bills, it is found in most cases more

satisfactory to present them promptly, proving to the client that you are a man of business and expect full pay for all services rendered. Show no feeling of compromise in the presenting of bills, and as in business, it is professional to present them promptly. Of course, this will not apply to all locations, but where possible it is very much the best, owing to the fact that most people seem to appreciate the service more soon after it is rendered than later on. Calls made to cases where no good can be done and no service is rendered, as in cases of serious injury, or where death may have stepped in before your arrival, unless client offers to pay you, it is, perhaps, just as well not to present a bill, but should his generosity suggest to him the offer of pay, it should be accepted.

All these points are worthy of professional consideration, and if carried out can only tend to make the relation of the veterinarian to his client one more agreeable and closer in that noble work, the alleviation of the sufferings of man's most noble servant—the horse.

DAIRY INSPECTION.

BY F. A. BOLSER, V.S., New Castle, Ind.

A paper read before the Indiana Association of Veterinary Graduates.

MR. PRESIDENT AND GENTLEMEN:—Dairy inspection is, at the present time, a very attractive subject to the veterinarian, from the fact that he can see not only a broad field for the improvement of the health of the people of this country, but also the stamping out, in a measure, of one disease whose death roll each year is greater than was that of the late war.

That to which I refer is not the only disease that can be contracted through the use of milk and its products, but it is the most dreaded disease, as the others may terminate favorably, such as diphtheria, scarlatina, etc., which could be nearly, if not completely prevented, by strict sanitary measures.

At present we are handicapped in this state for want of proper legislation, appropriations, etc., by means of which all

cattle intended for breeding and dairy purposes might be inspected.

Several of the Eastern States have legislation providing for the inspection of all dairy cattle; and the number affected are found to an alarming extent.

The officers of the State Board of Health, at their last meeting, passed resolutions, asking that the next legislature pass suitable laws, and make sufficient appropriation, to provide for efficient dairy inspection. We, as veterinarians, will be only too glad to extend any aid that may be in our power, not only in getting proper legislation, etc., but in carrying out the inspection. I would suggest that the appropriation be sufficient to compensate owners for all affected animals destroyed, from the fact that that would be an incentive to the stock raisers and dairymen to have their herds inspected.

Some eastern dairymen, who prided themselves on having healthy cattle, were very much surprised to find that, on using the tuberculin test, and having the animals that showed the infection slaughtered, upon post-mortem examination that a very large per cent. had tuberculosis.

One of the strongest points in favor of dairy inspection and stamping out of tuberculosis, is the fact that one out of every eight persons dying in the United States die from that disease.

In some counties of the old country, where the milk of the ass or goat alone are used, consumption is unknown. Through the energetic action of the Bureau of Animal Industry pleuropneumonia was completely eradicated from the United States; the eradication of a disease whereby the stock raisers of the United States were saved millions of dollars. Thus was eradicated a disease that was not communicable to the human family, either by the use of the flesh or the milk and its products.

If such strenuous efforts were made to prevent the spread of a disease that was simply the cause of a pecuniary loss, why should not a more determined effort be made to stamp out a disease which costs this country annually the lives of thousands of its best citizens?

To accomplish this measure we should first have proper legislation and sufficient appropriations, as heretofore mentioned, to allow the Sanitary Board, which should be composed mainly of veterinarians, the power to inspect and destroy all animals found to be suffering from tuberculosis in any form, upon remunerating the owners of such animals for the same. All dairy and breeding establishments should be inspected a stated number of times annually, and their sanitary condition carefully examined as to cleanliness, drainage, etc., and no new animals be allowed to be used in a dairy without first having been examined.

The inspection should not end with dairy and breeding cattle. The number of families who own one cow and supply a number of families with milk are innumerable, and in the majority of cases the sanitary surroundings are of the worse kind. They, too, should be inspected. There should be a chief inspector, and a sufficient number of assistants to co-operate with the board of health of each county. Each county board of health should have a veterinarian as one of its members, who would be the local inspector of that county. He should inspect all animals, and look after the sanitary conditions of all dairies, and make his reports to the chief inspector, as the legislature may require.

It should be the duty of the chief inspector, either personally or through his assistants, to examine all dairy and breeding establishments, together with the local officer, at least twice a year. The inspection should be compulsory, and the sale of milk and its products from any animal not having a certificate of inspection as sound, should be prohibited under severe penalties.

The people do not realize the danger which might be overlooked by not making a thorough inspection; in fact, they do not realize the enormous dangers of using dairy products from animals afflicted with tuberculosis, many of them not knowing that consumption is communicated in that way; nor do they realize that there are many other troubles originating through dairy products, from the lack of proper sanitary conditions.

Dr. Boor, of Muncie, relates a case as follows: "On April 10th last, accompanied by the State Veterinarian, Dr. Stull, and Live Stock Sanitary Commissioner Hall, they visited a case of suspected tuberculosis on the farm of Mr. A——. Upon examination, they found the animal to be in the last stages of tuberculosis. The state veterinarian ordered her destroyed, which was done, and also her calf, which was likewise affected, was at the same time destroyed. About the time the cow was destroyed Mrs. A—— was taken sick, and is now suffering from a well-marked case of consumption;" whether having been transmitted by the cow, or whether merely incidental, cannot, of course, be stated; but at the same time there are probably thousands of cases similar that have been passed unnoticed. It is a well-known fact that thousands of children die every year with tubercular bowel trouble, caused from the milk obtained from tubercular animals, the delicate mucous membrane not being of sufficient vitality to throw off the dreaded germ. It is also true that you and I, in a debilitated condition, could not throw off the germ of tuberculosis.

It is hardly worth while for me to continue the subject any further, as you all realize the danger as well as I; but I would suggest to all of you that you confer with your representatives and senators from your districts, and impress upon the mind of each the necessity of legislation by educating him. Show him the danger arising from this disease in cattle, give him literature on the subject, and let him come here next winter scared to death.

TETANUS.

BY W CARNES, V.S., Washington, Ind.

A paper read before the Indiana Association Veterinary Graduates.

It is a pleasure that I am permitted to stand before you on this occasion, for the purpose of stating frankly my views regarding this wide and important, although obscure disease, which has prevailed beyond our comprehension. Until recently,

its cause has not been definitely understood. For years past our educated and experienced men, to whom I am not a circumstance, have studied, microscopically, the minute details, extracting the cause, as you have laid before you, due to the direct influence of a micro-organism, localizing and inhabiting solely that position of the nervous centers, namely the spinal cord.

This fact has only been recently established, and until then it was a mere supposition and a misnoma, without the least shadow of foundation. However, if this be the case, is it at all reasonable that if this germ thrives as taught us, exclusively upon the albumen found in the cord where there is none—in comparison to that found in the blood.

Taking this for granted, is it not a broad assertion, as well as frivolous, in which one so deliberately attempts to picture in type, that these germs are invariably present in the spinal marrow, and cannot, under any circumstances whatever, be found elsewhere? Then you will observe this subject which I have chosen is indeed complicated, and after due consideration I cannot conscientiously believe and endorse the theory that tetanus is due to the direct influence of this spiral club-shaped germ, but on the contrary, possibly to their toxic ptomaines. However, this has not been corroborated. Nevertheless different views and ideas have been daily advanced, sufficient to thoroughly convince me that it is absolutely impossible withal to entertain the idea that tetanus is contagious and infectious, and can be transmitted by inoculation.

Adhering to the belief confirmed by our ablest authorities, that prior to death, under no circumstances whatever, can this disease be conveyed in any manner. This view should be considered discriminatively, for if it were due to a germ found around old hair factories, in the dust and debris of the dead, then it is remarkably true that in this particular tetanus would be more prevalent, and in some sections an epizootic. Then by observations these facts are brought to bear, that the virus of tetanus is neither in a fixed or volatile form. Circumstantially this is true, whereas you cannot ignore a positive fact, but con-

sider well and weigh carefully before you condemn. Again, if these germs, so remarkably few, exist and gain access to the body through the circulatory and lymphatic system by wounds and abrasions, and not through the respiratory or alimentary canal. Conservative, as you are, it would be utterly impossible and absurd to entertain an idea of this kind, as experience has taught us differently, and if you do not regard your opinions worthy of mentioning, and reserve no confidence, fate will decree you. For reference we will touch carefully the Koch theory and regard the great excitement of such a marvellous and wonderful discovery of the bacillus tuberculosis, which took the entire continent by a storm of surprise, swaying the humble and most able intellectual faculties of mankind, who were competent and capable of judging, but induced, under the circumstances, to coincide, for at that time it was unquestionably proven the Koch theory was undoubtedly correct, and its treatment so thoroughly substantiated that it was beyond our contradiction. However, the Russians have exclusively abandoned this theory, which received, but did not deserve, one iota of praise, and if this be the case, surely it would lead us to suspect and believe that some of our spontaneous experts could cultivate, describe, and beautifully picture such micro-organisms superior to nature's comprehension. Then if the tubercular theory and treatment is questioned, I persistently contend that others could be. My friends, take into consideration that there are people in existence to-day that are seeking notoriety and prominence otherwise than by facts, presenting to us this germ misnomer, perhaps an imaginary foundation deprived of conscience. No matter how deliberate or weak we may be under the laws of our constitution and merciful Creator, we inherit and reserve the right, as individuals, to render and express our sentiments in a conscientious and justly manner. At the present age we are taught that the earth moves around the sun and moon, which is evidently true, according to our astronomers. But friends, it is a doubt, in my mind, whether or not the germ of tetanus ever or will move within the system of an equine previous to death.

If so, God grant that I might some day be the happy possessor of a microscope, which will not only enormously magnify, but make walk in single file, these germs as soldiers, that I might see them.

Unless I cannot gratuitously endorse their views, whereas we are willing to sacrifice our own lives. Knowing what we do, thereby taking anything but precautions as to isolating or antiseptics, and regard abrasions of said individual in attendance with impunity, as he careth nothing for fear of transmissions or the existence of these germs, and can treat accordingly upon these basis.

It is compulsory for us to admit that an autopsy of the succumbed has revealed spiral club-shape germs which are very scattering indeed, existing as they do now, whether or not these germs are found prior to death, or whether it requires the death of the patient to produce them, is the question which has often agitated my mind. Were it that they were present within the system before death is yet to be determined, whereas if we could extract the blood of an affected animal, and transmit by inoculation, certainly this disease could readily be conveyed. However, this theory of contagion under such conditions cannot be proven, either by statistics or experimental tests ; and again, we have many other diseases which are closely allied symptomatically, such as hysteria, uremic poison, and especially an overdose of strychnine ; in this instant, with a snap diagnosis, could you definitely distinguish, render and impart an opinion satisfactory to your own mind, without an inquiry of investigation or the presence of said micro-organism.

However, my insinuations must not be misconstrued, as I allude principally to tetanus idiopathic, and positively contend that it is detrimental to our medical profession. Not only do I pride in the liberty to denounce, but it is with pleasure that I so conscientiously condemn the absurdity, and deem it a faulty and incorrect term, which should not be tolerated, but discarded from our veterinary science.

Before you are my sentiments, prejudiced as they are, in

which I have fairly dealt with this subject, and consider it useless to expaciate further or discuss the minute details and humiliate the microscopical pathology, except the exceedingly rare trace of this exhumed and post-mortem germ. Never to date has a microscopist publicly announced or satisfactorily proven that he was able to find any lesions of importance, and this being void it might lead one to suspect that they are inert, or we would surely have softening and degeneration of the surrounding tissue. Take into consideration the obscurity, and possibly you will yield sufficiently to bear me out in some of my remarks upon this mysteriously and difficult subject. No doubt cases have often come under your observation, with symptoms aggravated by excitement totally void of abrasions, which compelled you to diagnose tetanus idiopathic, in order to corroborate our text books ; on the other hand, let there be a wound ; refer to your treatment, especially the former, and did you ever treat this disease antiseptically, or with the view of destroying any micro-organism whatever? Emphatically no! it is the least of our intentions, as our treatment depends solely upon nerve sedatives, quietude and support of the system. On the contrary, if these germs were present as in septycema, there would be some effort in this respect, if only a desired act of determination toward their destruction in tetanus, is no more nor less than numerothesis, or a degeneration of the motor functions, due to a morbid excitement of the motor nerves, of which the sensory are of a secondary character, more prevalent in hot than in temperate climates, influenced by cold and wet weather, choosing for their victims the vigorous and masculine sex ; this I cannot account for, unless one would believe that tetanus was an affection, peculiarly adapted to a certain class of animals other than a disease known as specific and contagious.

Then our clydesdates, with their sluggish circulation and inactive nervous centers in a tetanic locality, would behoove us financially, as veterinarians, to immediately emigrate. Viewed in this light, there seems to be no definite or fixed foundation other than a rumored supposition approved by men evidently

trying to gain notoriety and prominence of consideration in a bacterial outcast of fine intellectual attainments, sufficient for us to sway and vanish our views, which are possibly, in a measure, correct. Nevertheless this germ theory deserves to be praised, in which it has been an advantage and highly beneficial to the medical science, and without a thorough knowledge of bacteriology, it would, indeed, be difficult for us to practice successfully the art and science as veterinarians.

Then these approximated views, regardless of proof sufficient to sustain any investigation to which it might be subjected, are to be regarded, perhaps, as an imposition, otherwise than to receive our endorsements.

In conclusion, I think it policy to refer to the metostosis and the death pending, as to its actual cause, knowing that a short time before death the temperature is enormously increased ; then death quickly ensues, which leads us to suspect that within the system there is something of a degenerative nature, which compels us to believe that tetanus is a septic character. Then we must respond satisfactory to the fatality and sudden death. Take the toxic conditions of the muscles, due to the periferal ends of the exposed nerves, which would cause excruciating pain sufficient to increase the difficult and rapid respirations, so as to prevent the required amount of oxygen for the supply of the system, then it is not beyond our knowledge of comprehension that we could easily have death from the absorption of carbonic acid gas, or mechanical asphixia. Again, the sudden changes, due to the rapid burning of the tissues, is corroborated by the intense thirst and bodily heat which would undoubtedly increase the temperature to such a degree that death would quickly ensue from degeneration and "coaglation of the albumen contained in the blood," after which life is utterly impossible.

If this is doubted, then our physiologists are wrong. However, I believe them correct, but must admit that cases are on record where the temperature ranges comparatively high during the advancement of certain diseases. Nevertheless we must observe that they are of a fatal nature ; then if you feel disposed

to discard my views upon this subject, you will be compelled to ignore and exclude under such circumstances our able and competent physiologists indiscriminately, for we as students, have no right whatever to contradict the degree of temperature, or dictate in any case with perhaps depreciated and incorrect thermometers as are no doubt in use to-day, owing to their cheapness in value. Remember we are taught that 110° F. will coagulate the albumen, after which life is no more. Then our increased temperatures, from a physiological standpoint, will not undergo the test. If it is possible that this germ prevails, and is the sole cause to induce tetanus idiopathic, surely in this instant it must be hereditary, and lies dormant to invade such injuries void of abrasions, thereby exercising their power of destruction at will.

We frequently have tetanus, the result of a simple fracture ; then if these germs gain access to the system only through an abrasion, not by the respiratory or alimentary canal it must be hereditary, and lies dormant, or emphatically we do not have tetanus due to its direct influence. Humble your opinion and remember we could easily have death from excessive constitutional disturbance, or perhaps septycrema, in which we invariably find micro-organisms closely allied, and assuming comparatively the same shape as those of the "bacillis tetni." Then if tetanus is of a septic nature, and due to a micro-organism, it is absolutely the only disease on record which is not treated in some form or other antiseptically, with the view of destroying said germ, then we must take for granted that this little fellow exists, thrives and dies, and is generated likewise, as we have no other history of his life until after death, which might present its self in such a way, that one not exactly acquainted, would perhaps imagine these germs were distantly related to the exhumed Egyptian mummy ; whereas it is necessary that both are to undergo practically the same process for their productions, identified by their history of teachings and recognized by their presence. Circumstantially I believe the latter are much more plentiful than these germs of tetanus.

Then if it is due to a microbe, we must procure such sanitary measures in order to avoid this dreaded malady and view from a critical standpoint, in which there is neither honor nor fame attached, and upon which our lives are pending. Thanking one and all kindly, the subject is with you.

THE EXTERNAL CONFORMATION OF THE HORSE.

BY PROF. E. A. A. GRANGE, V.S., Michigan.*

(Continued from page 426.)

Between the knee and the fetlock we have a part familiarly known as the canon (Plate I, 32); it is composed principally of the large canon bone in front, with tendons, called the back tendons, behind. In shape it should be flat from side to side, the back tendons should stand boldly out behind, leaving an evident line of demarkation between them and the front part of the region, they should be hard, almost bone-like, to the touch, and free from all puffiness. The posterior part of this region may or may not be clothed with long hair, according to the breed or fashion of the times. The skin covering the tissues should lie close to the bone and tendon, producing the sensation when handled that all is skin and bone. Below the fetlock joint and above the hoof we have a region designated the pastern, which is a most important part of the leg, it being the seat of that very troublesome disease, ringbone. Besides examining this part for disease, we should regard its shape and direction according to the uses the horse is intended for, and if it is to be used as a saddle horse the kind with long oblique pasterns are more elastic and graceful in their movements than the short upright sort, which are often unpleasant to the equestrian on account of the concussion produced by the more or less upright columns of bone. Our experience has been that we usually find straight shoulders in horses with upright pasterns. In horses used for heavy coach or draft purposes the pastern may be comparatively shorter, stouter and more upright than those used for

*A reprint from Bulletin 110, Experiment Station, State Agricultural College.

saddle or light road work, but very straight pasterns are not desirable, in our opinion, in any class on account of the concussion they are liable to produce, but even the long oblique kind may be, and often are, overdone; in them the strain upon the parts is liable to produce an irritation that in its turn will cause ringbone.

The pasterns of the fore legs are usually a little more upright than those of the hind leg. This being the case, we think it one of the reasons why ringbone is more prevalent in the hind than the front pasterns.

Continuing down the leg we eventually come to the foot, a region which has been given a great deal of consideration in all ages and by most writers upon equine topics; indeed it is doubtful if there is any one space in the whole animal which receives so

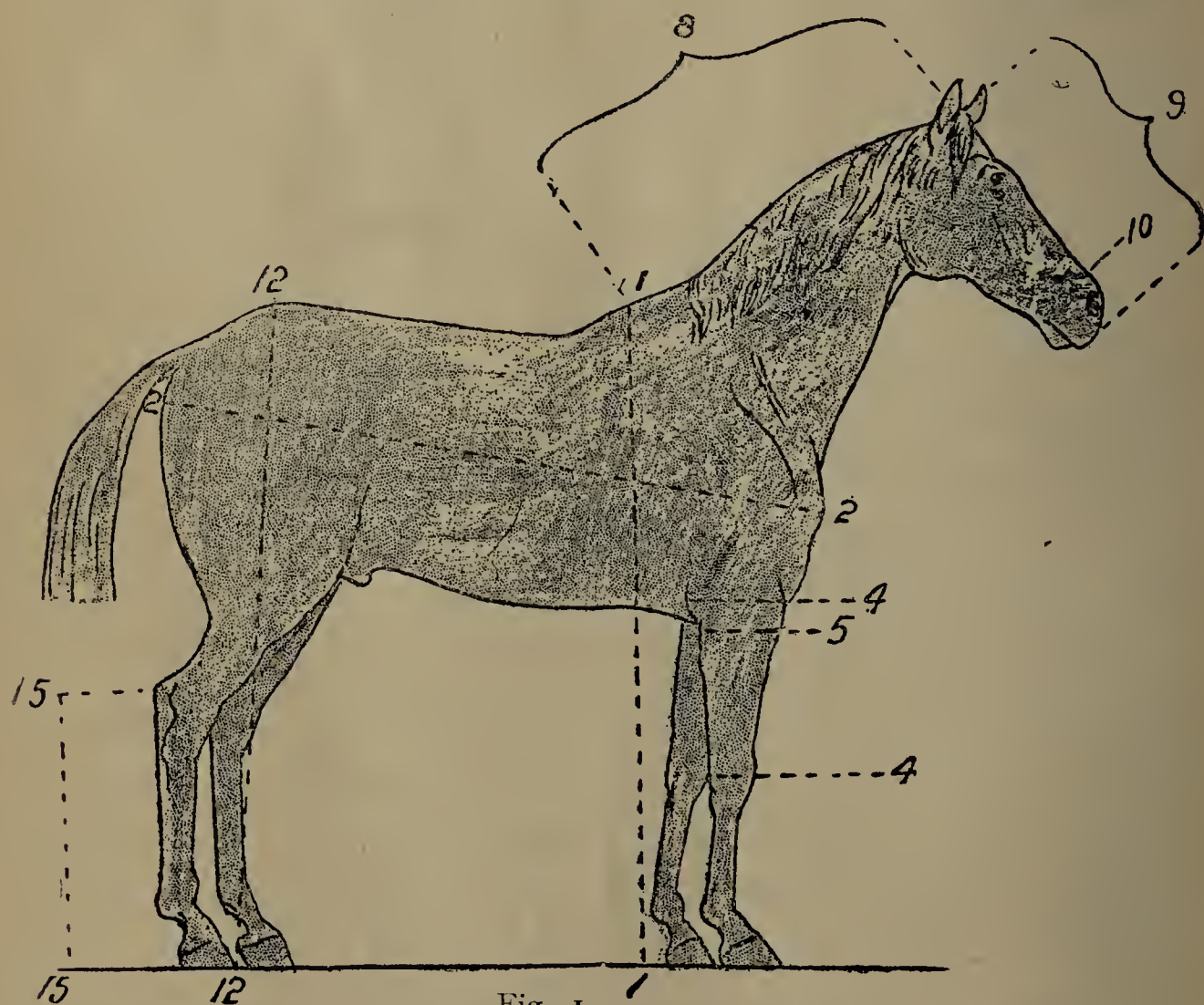


Fig. 1.

PLATE NO. 3.

Points which are measured from and to, are indicated by the numbers on the above figures.

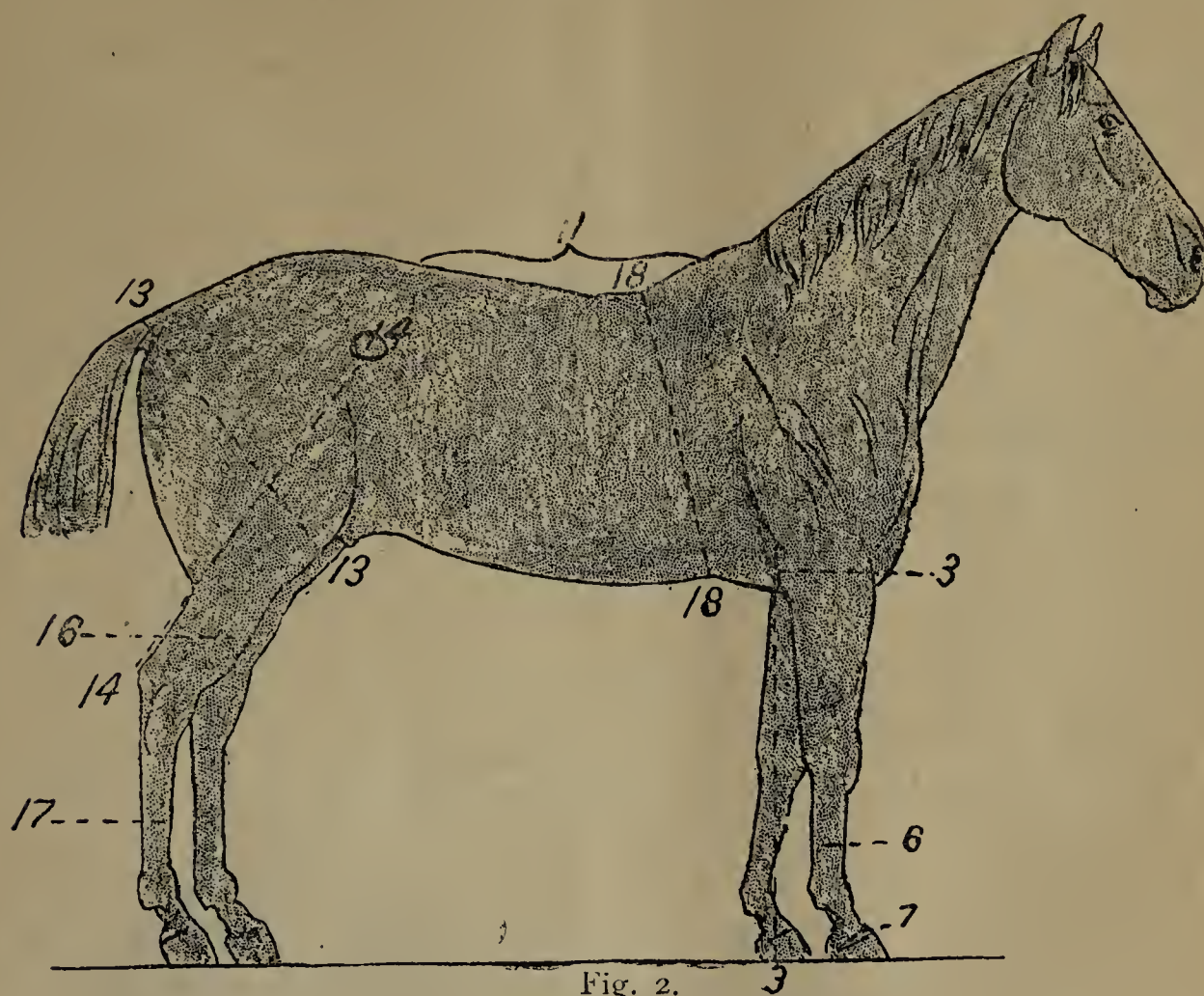
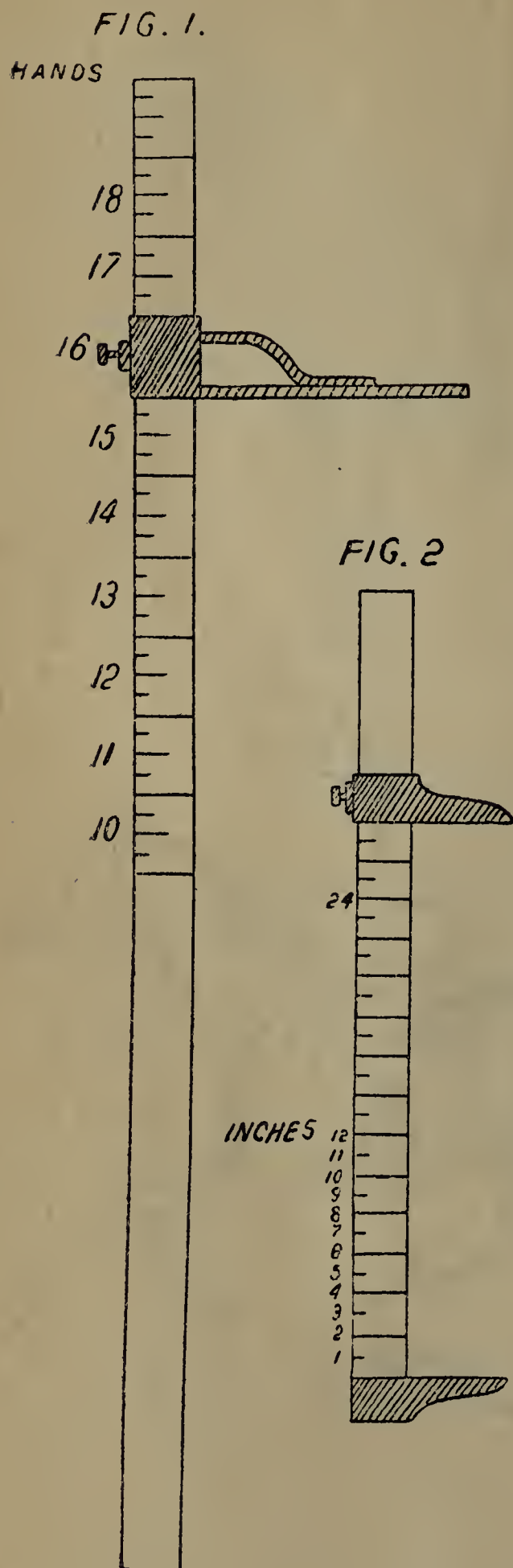


Fig. 2.

PLATE NO. 3.

much attention. We hear the expression "no foot no horse" wherever we go, showing in some measure that a good foot is held in high esteem by all admirers of a well formed animal, and a horse with a badly formed one is often dubbed a plug or a screw in the stable lore of the present age.

The expression is so common that we have endeavored to trace its origin, but have failed to discover the exact source from which it came, so we have concluded that from its being such an old saying it must have originated long before iron shoes were used, and in those days people did a large part of their traveling upon horseback; under such circumstances, with an unshod horse, it does not seem unreasonable to suppose that the horse's hoof would wear out on a long journey, and the creature soon become tender as well as lame and eventually unable to travel; the rider would naturally look for the cause of the animal's inability to progress in the usual way, and on ex-



CONVENIENT FORM OF INSTRUMENTS FOR
MEASURING HORSES.

The height of a horse is usually measured by hands, a hand being 4 inches, 15 hands being just 5 feet, or 60 inches. Fig. 1 is convenient for measuring the height at the withers and croup; fig. 2 for measuring the width of chest at shoulder points, width of hips, width of forehead and length of head. Other measurements are more conveniently made with an ordinary tape line.

aming the foot and finding it worn out, *gone, as it were*, might he not very appropriately exclaim "no foot no horse!" because he would have to abandon that animal for that journey at all events. When we come to consider what a number of diseases attack the foot, and what a large majority of the cases of lameness which we are daily brought in contact with have their origin in the foot, we can begin to realize why this part should be regarded as being of so much importance, and the study of *pedology*, or science of the foot, so interesting to those who are engaged in any way in the equine industry.

The foot (Plate I, 35) may be regarded as that part embraced by and including the hoof, the upper portion of which is called the coronet (Plate I, 36). We find, on comparing the front feet with the hind ones, that the former are usually if not always larger and flatter. This is no doubt owing to the fact

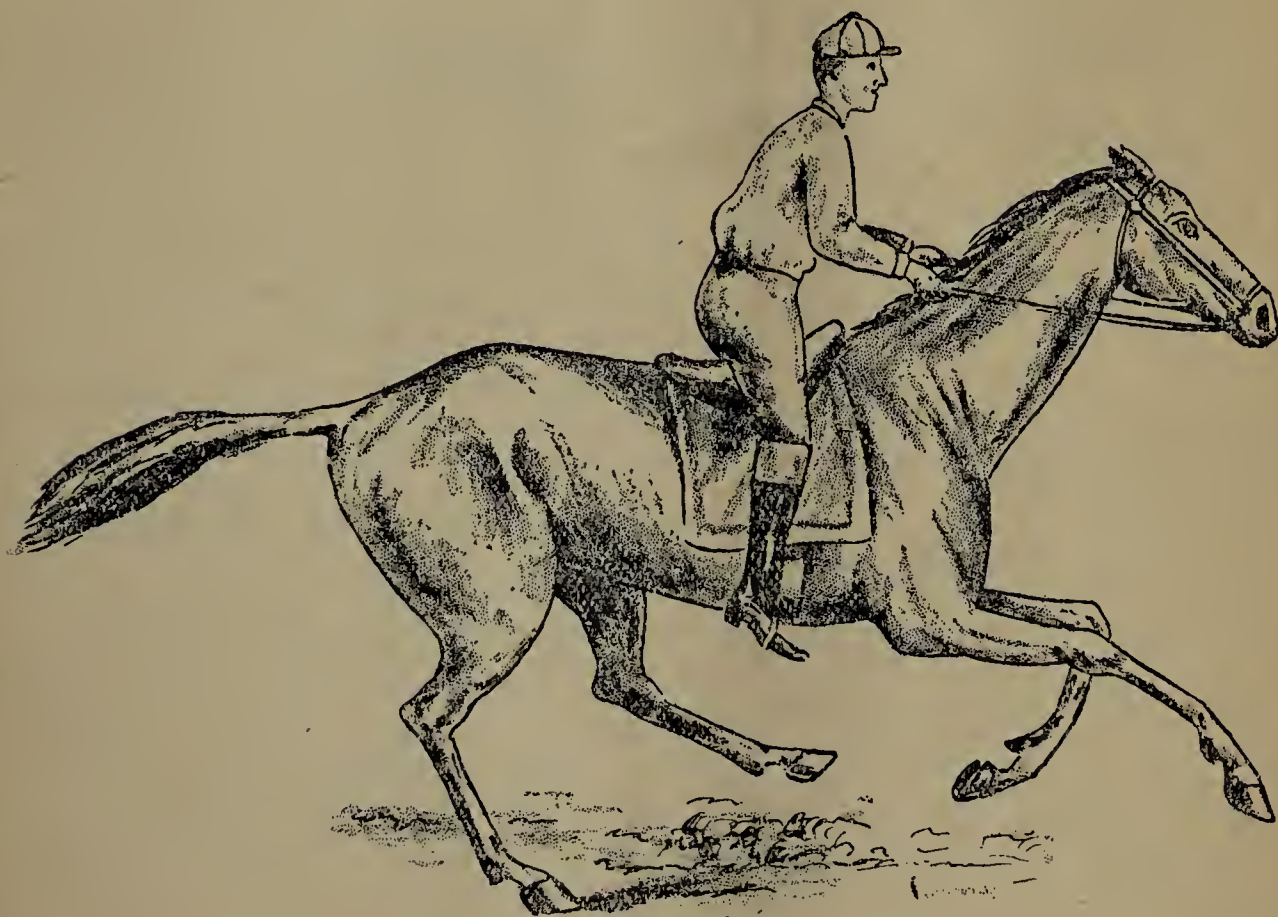


Fig. 1.

PLATE NO. 5.

From an instantaneous photograph. Horse in rapid progression, the entire weight of the body being on one hind foot.

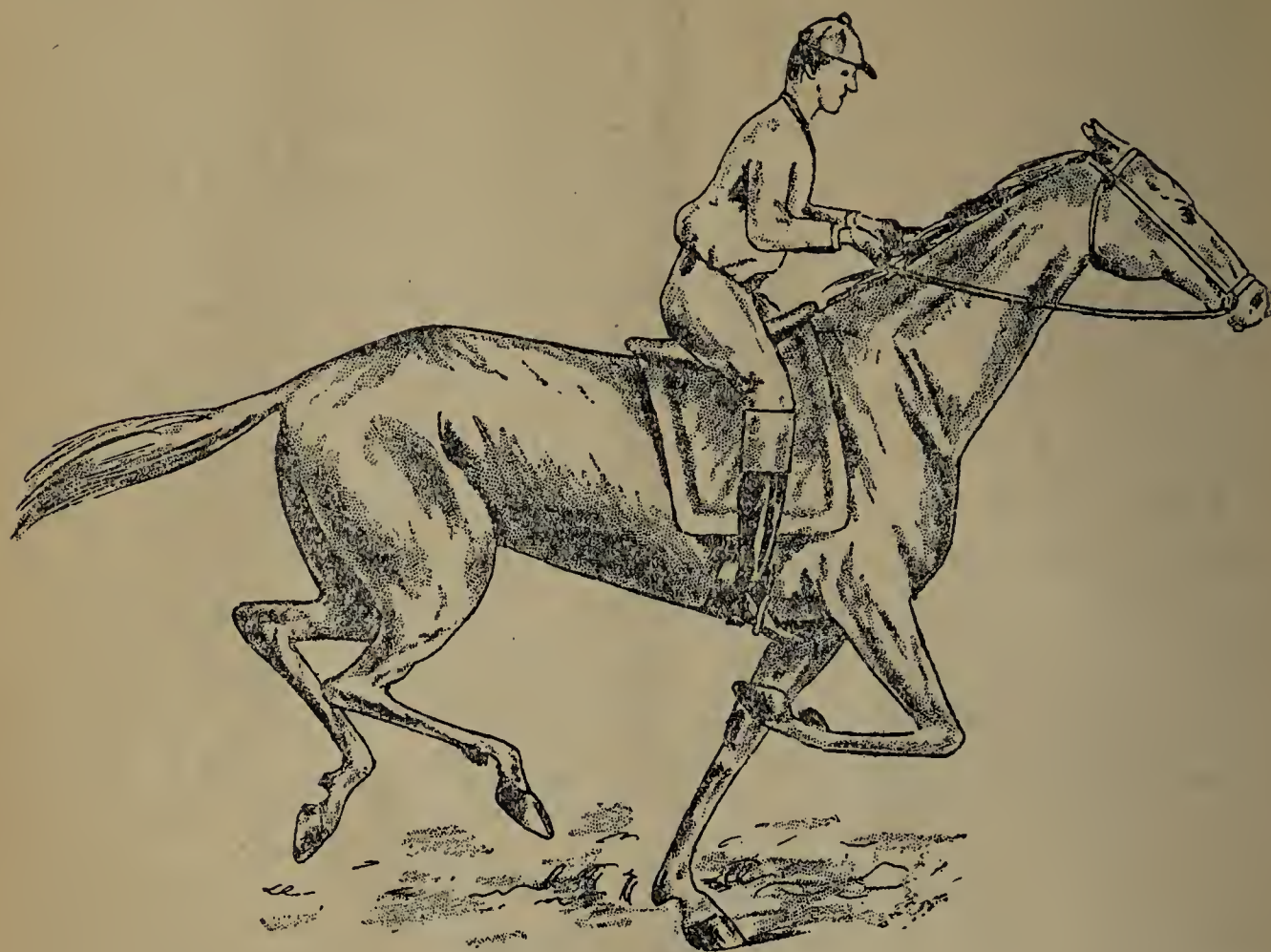


Fig. 2.

PLATE NO. 5.

From an instantaneous photograph. Horse in the act of rapid progression, the entire weight of the body being on one fore foot.

that they have to bear more weight; in some horses considerably more, for instance, the actual weight of a Shire stallion, as I took it, was 1580 lbs; the front feet were then placed upon the scales and brought the beam up at 940 lbs.; the animal was then reversed and the scales indicated 634 lbs., showing a difference of about 306 lbs. Several other ordinary farm horses were handled in a similar manner with the following results, to wit:—

No. 1, a gelding, entire weight 1180 lbs.; front quarters, 690 lbs.; hind quarters, 510 lbs.; difference in favor of front quarters, 180 lbs.

No. 2, a mare, entire weight, 1280 lbs.; front quarters, 720 lbs.; hind quarters 560 lbs.; difference in favor of front quarters, 160 lbs.

No. 3, a gelding, entire weight 1220 lbs.; front quarters, 660

lbs.; hind quarters, 552 lbs.; difference in favor of front quarters, 108 lbs.

No. 4, a gelding, entire weight 1150 lbs.; front quarters, 630 lbs.; hind quarter 3,510 lbs.; difference in favor of front quarters, 120 lbs.

The slight discrepancy in those cases of the foregoing between the entire weight and the sum total of the front and hind quarters, is no doubt owing to the displacement of the centre of gravity in the different attitudes, which could scarcely be controlled. When the animal rests with its foot upon the ground the part we see is called the wall (Plate II, Fig. 1, 10); it is composed of innumerable horn fibres, which run parallel to each other, and are held firmly together by a tenacious substance peculiar to the part. The external surface of the wall should be smooth and free from grooves or fissures running in any direction; in outline it should be circular upon its lower border, having a somewhat smaller circumference at the upper or coronal edge. The wall should be moderately deep and strong; if shallow the foot will be flat, a variety which is sometimes a perpetual nuisance on account of often being affected with corns. The wall should not be contracted at the heels, as this form is usually associated with coffin joint lameness or some other chronic disease of the foot. The sole of the foot should be concave rather than flat, and that pyramidal shaped cushion, the frog, which appears as if let into the sole behind, should be well developed.

The hind feet are invariably smaller and their soles more convex than the front ones; lameness in the hind foot is of comparatively rare occurrence. Many persons believe that feet with dark colored horn are stronger, and able to stand the wear and tear of hard work better than the light colored ones, but our experience has failed to demonstrate the truth of this idea. The white foot will show the invasion of the part by inflammation more perceptibly, which we think is the cause of disease often being noticed in the white one when a similar complaint would, and often does, pass unnoticed in a dark colored foot.

The hind leg.—The haunch or upper thigh (Plate II, 15-15) is a region that is somewhat difficult to define as far as its exact limits are concerned, for we find it running imperceptibly into the croup at one extremity, and into the gaskin, or lower thigh, at the other, so we will have to draw a little upon our imagination and say that it is situated between two lines, the one drawn from the upper part of the point of the hip to the upper part of the point of the quarter, the other drawn from the stifle joint in an oblique direction downwards and backwards following the lower border of the prominence formed by the large superficial muscle on the outside of the leg (Plate I, 13). In examining horses as to the excellence of the haunch we should first of all see that the muscles stand boldly out. In the horse where these muscles can be recognized independently of one another, we usually find an animal that possesses a great deal of strength and endurance. Then we should view the animal from behind to see that the hips and quarters are broad. Broad hips are not only indicative of strength but are an immense advantage to the brood mare in the act of foaling, because they indicate a large passage for the foal to pass through, consequently the act of labor can be accomplished with more ease and less risk.

The gaskin, or lower thigh (Plate I, 15, Plate II, Fig. 2, 16-16), is the part below the haunch and above the hock; it is important that the anterior and external part of it be well developed, because that part is composed of a group of muscles which are concerned in carrying the body past a center under certain circumstances. If we examine other instantaneous photographs (Plate V, Fig. 1) we will find that in certain attitudes of progression the entire weight of the body is upon one hind foot, and these muscles are largely concerned in throwing it off or carrying it past the center, hence the necessity for a good horse to have a lower thigh composed of tough, hard muscles, and if they stand boldly out all the better, for then the region becomes more attractive.

The hock (Plate I, 16) is a very important joint, situated between the lower extremity of the gaskin and the upper end of

the shank bone. It has been said that a large majority of cases of lameness in the front legs were due to some disease of the foot, but this order of things is generally altered when we come to the hind legs, in them the origin of most cases of lameness, is very often of a most intractable nature as far as yielding to treatment is concerned, unless it is judiciously dealt with in the very earliest stages; hence the necessity of selecting animals with well formed hocks. The variety of hock which gains most favor is the one which is deep from before backwards and broad from side to side; the skin should be in close contact with the hard tissues underneath, doing away with that soft meaty appearance we sometimes meet with. The superfceries of the joint should be free from large soft puffy tumors, especially after the colt-hood days. The hock joint being of so much importance (as it is so liable to become affected with disease), it may be an advantage to the student to make a few suggestions here as to methods of examining it, for which purpose it is very convenient to regard the joint as having four surfaces—front, back, inside and outside. To examine the part thoroughly, both hind feet should be placed together, and in line as we view them from side to side; the examiner should then stand, say three feet out from the point of the shoulder, and make an ocular examination of first one joint, then pass to the other side of the horse and examine the other; in doing this care must be taken to see that both joints are alike, especially at that point where the front and inside surfaces seem to meet. If we find a prominence in one that does not exist in the other we may be tolerably certain that a bone spavin exists in the one with the prominence. In some instances it is difficult to make up the mind by this method, in which case an examination made from between the fore legs looking backwards, and examining first the inner aspect of one hock and then the other in quick succession, this will sometimes help us to determine with tolerable certainty; if we are still in doubt, we may get an assistant to hold up one front foot, and manipulate the joint with the fingers, using the eyes at the same time. Should the part be thickly clad with long or furry hair,

saturate the surface with water, which will cause the hair to lie close to the skin, and this will sometimes reveal enlargements which would otherwise pass unnoticed. It may be advisable to saturate the hair of both hocks. The saturation of the hair of the parts answers very nicely in examining the pasterns for ring-bone or other superficial diseases dependent upon a certain amount of enlargement in any part of the body if the hair is long. While the assistant is holding the fore foot from the ground, the front of the hock may be examined for that soft, puffy tumor known as *bog spavin*, and the sides of the joint for *thoroughpin*; at the same time the outline of the back of the joint may be scrutinized to see if any remarkable deviation from a straight line exists in one hock that is not in the other; if it does, the probability is that a *curb* is the cause of it. It must be remembered that similar diseases do sometimes exist in both hocks at the same time, in which case it may be necessary for us to be familiar with the anatomy of the parts in a manner that can only be obtained by dissection or careful examination of the dissected parts, before we can distinguish between the natural formation and disease—for instance, we have *curby-hocked* horses, a style of conformation that may cause a doubt as to the existence of disease in the minds of those who have not given this subject a good deal of careful attention. This suggests the commendation of the growing tendency to have a veterinarian in the show ring to decide cases which properly come within the jurisdiction of an expert. The question as to why the hock joint is so often the seat of lameness or disease often claims our attention, but if we examine it from the anatomist's standpoint we will at once see that it is a very complicated joint, really made up a number of little joints, and like other complicated things is quite liable to go wrong; but this is not all, for if we watch a horse in motion, fast or slow, backing or advancing, we will see that a more acute elbow is formed by this joint than at any other part of the leg, and in such a manner that it has to bear the strain of two levers, so much so that we might reasonably wonder why it is not oftener deranged; this, perhaps, may be explained by the

fact that one of the levers, at all events, works upon the jack-screw plan (which may possibly have something to do with the origin of the term jack spavin); for evidence of this we have only to watch a horse drawing a load over a surface where the footing is a little slippery, and we will observe that the hind foot turns around in a somewhat circular manner as if boring into the ground.

(To be Continued.)

REPORTS OF CASES.

SPASM OF THE LARYNX

By M. U. TRUMBOWER, Sterling, Ill.

Aug. 14, 1894, I received a telegram from W. C. Galbraith, V. S., of Wheaton, Du Page County, Illinois, requesting my immediate presence at Wheaton to investigate a very fatal disease among the horses of Mr. H. B. Patrick. I arrived at 10 A. M. on the 14th, and found five horses dead, all of which died within six hours time on the previous day.

Mr. Patrick made the following statement: "At 6 A. M. he sent one of hired men out into the field to bring up one of the mares for work. The man returned and reported that the animal was ailing. About an hour later Mr. Patrick reached the field and found this animal and another one dead, and a third one breathing hard with froth and water running from the nostrils. He immediately sent to town, one mile, for Dr. Galbraith, who arrived at 9 A. M., and found three dead in the field. One four year old mare, that he had been treating for a sore neck, appeared indisposed. Dr. Galbraith felt her pulse and considered it normal in frequency and volume. He then proceeded to make an autopsy on one of the dead animals. At 9:30 the four-year old mare was noticed to cough violently several times, and a frothy discharge, mixed with serum, came from both nostrils. Soon this discharge became excessively profuse, and the breathing gradually more impeded. She succumbed to suffocation at 11:15.

Dr. Galbraith attempted to administer chloroform by inhalation, but she could not bear it. He then administered bella-

donna and antim et pot-tartra. He thinks the latter gave slight relief for a short time.

The fifth case manifested symptoms similar to the former one and she died at 12:15 P. M.

The symptoms of all were exactly alike—discharge of serum and white froth from the nose and mouth, and difficult breathing.

Dr. Galbraith made a post-mortem examinations of two, and found the stomach, liver and intestines perfectly normal. The lungs were greatly distended with air, and, on cutting into them, large quantities of froth exuded. There was no evidence of active pulmonary congestion; no discoloration of the sputum post-mortem.

I made a post-mortem examination of the bay mare, the last one that died, twenty-two hours after death. I found all the organs as described by Dr. Galbraith in his cases, but, on exposing the larynx, we discovered an extraordinary intense congestion of the muscular tissue of that organ, both the intrinsic and extrinsic muscles; also great blood extravasation into the cellular tissue surrounding the larynx. The mucous membrane of the larynx was highly congested, the discoloration extending into the pharynx and fauces.

Diagnosis.—Enzootic spasm of the larynx. What caused it? Mr. Patrick is a large landowner and keeps all of his livestock in the very best condition. His stables are situated on high ground, and all the stock obtains water from a trough near the barn, fed by a wind-pump from a deep well. These five animals, consisted of three mares with foals at their side, and one old mare and a two year old mare. One of the colts became slightly affected, but recovered.

These animals have been in a seven acre field all summer, only one of which was worked during haymaking this summer. An oat stubble field was thrown open to them three weeks ago. For five weeks there has been no rain until last Saturday the 11th rain fell to soak the ground about two inches. The temperature was even, from 80 to 90°, for several weeks. What is more plausible than to believe that the slight warm rain on a parched soil favored the rapid development of some fungus

growth which those horses ingested with their food, and that the toxic effect induced a persistent laryngeal spasm terminating in death. A number of horses and colts are in another field half a mile distant from the fatal one none of whom have become affected.

This, I think, indicates that the cause is local and confined to this one field. This pasture lot and oat stubble is remarkably free from weeds, entirely devoid of trees of any kind and only has a few rods of osage hedge on one side. It is seeded in tame grass, and is well drained. During the past four weeks these animals have been fed partly on hay and oatrakings, as the grass in the fields is all burnt up by the prolonged drought.

REMOVAL OF CAULKBOIL BY ELASTIC LIGATURE.

BY J. C. MYERS, JR., V. S., Cincinnati, Ohio.

About thirty years ago the elastic ligature was introduced in human surgery rendering efficient services. Gradually it found its way into the veterinary field. Why it is that this practical *modus operandi* has not become more popular in our profession is not clear to me. I do not want it understood that it is due to inactivity, no, no, the veterinary literature of the day gives evidences that we have untiring and able workers who keep abreast with the human medical and other esteemed branches of science. Microscopy and antiseptic doctrine have wrought great changes in veterinary science and if it has been at the expense of practice, the development in these directions will soon equalize matters.

Well known authorities entertain different opinions regarding the use of the elastic ligature. Pench and Toussaint prefer it to any other. In comments on an article from a French journal on this subject, Hering pointed out the advantages attained by Rossignol and Nocard in various operations by means of this contrivance and observed that the elastic ligature seemed to gain favor with veterinarians.

Fleming, in his operative surgery, regards this expedient as a useful surgical auxiliary, and, in a plain, concise way, presents its practical application; while Vogel, Liautard and Bayer,

though they acknowledged the good points of this procedure, would seem it a mistake to discard the knife. Dieckerhoff employs the hemp string for the ablation of enlargements with best results.

In an article entitled "Removal of Caulkboil by Ligature," in Vol. xi, page 121 of the AMERICAN VETERINARY REVIEW, an allusion was made to the effect that I would repeat the experiment which I did, and having attained gratifying results I will briefly describe two cases.

If the whole process consisted simply in applying the ligature, any one, with a little dexterity, could perform it, as there is no anatomical knowledge required, but should a layman attempt the ablation he would soon learn that more than general knowledge is necessary to finish the real task, namely, the healing part, consequently would be obliged to call in a specialist.

Case 1.—Two years ago I treated a dray horse, middle age, with fistulous withers and caulkboil. Whether the fistula originated from the ill fitting saddle cushion alone, or whether the caulkboil on the left elbow, hard and suppurating for over five months had anything to do with it is a question, though it is improbable. At least the owners claimed to have noticed some winding blood vessels (presumably lymph vessels) running up and down the shoulder toward the tumefied and slightly suppurating capped elbow, indicating a metastatic development. A therapeutic interference was not necessary, as there was no general morbid symptoms present beyond a mopish cautious movement in turning the body which aroused some suspicion. Upon relieving the withers of its corruption and decayed tissue, the wound was washed, dried off carefully and well moistened with solution of resorcin 3 in 5 twice per day. In six days the horse made a fair change for the better, so that his behavior and the aspect of the sore withers permitted an additional encroachment on his organism, that is the application of the elastic ligature at the base of the caulkboil which I encircled twice with a rubber tubing of 4 millimeter diameter, stretched it nearly to its full extent and tied the ends in a double knot. The tumor dropped off on the twelfth day; during this time it became somewhat larger

and warmer, and a moderate increase of sensitiveness was also observed. The detached growth left a raw, conspicuous space of about 5 inches in circumference and as smooth as if cut off with the knife. Expecting this spot to be elevated soon with swollen muscular tissue I had it dampened twice per day with pure phenylic acid. Already, on the third day, I noticed the raw, smooth surface becoming convexed, proof that the phenylic acid would not keep the new granulations within proper limits. I then touched the protuberance lightly every morning with caustic potash and had the phenylic acid applied every evening until I found the superabundant growth of flesh arrested. From now on until cicatrization was complete, which was about the eighth week, resorcin solution was used. Very likely if dermatol (which could not be obtained at the time) had been applied mornings and the resorcin evenings it might have scarred off a little sooner. By the sixth week the wound had grown so small and attracted so little attention that the horse might have been put to work had it not been for the fistulous withers.

Case 2.—In the latter part of September last, I was called to a villa about four miles distant, to see a 20 year old carriage horse with caulkboil on the right leg of 3 weeks existence, the size of a man's fist, open below and discharging a small amount of pus. I had some cotton saturated with a solution of creoline introduced into the cavity once per day and the exterior bathed with warm salt water. A continuance of this treatment for two weeks improved the condition so much that I instructed the groom to keep on as long as the horse was doing well.

On March 8th, I was again summoned to see the same horse. Found him reduced conditionally, lame in the right foreleg (navicular.) Elbow tumor enlarged, apparently sarcomatous, occupying the lower and inner third of the shoeboil cavity.

As the owner had been absent all winter the horses received but little attention. The day before my visit the team were driven twelve miles, the first trip in months; no lameness was observed, however, nor did the coachman meet with any mishap that would tend to cripple the horse.

After a lengthy hydrotherapeutic treatment of the foot, the horse recovered from his lameness, which good result I attributed to the long rest rather than to the former. This course pleased the owner better than all medical appliances, as he is opposed to blisters, bloody operation or any severe remedies. Knowing this, I cautiously suggested to him that I could remove the caulkboil without hæmorrhage, to which he readily agreed, Still I was obliged to acquaint him with the fact that the detachment of the tumor would present a raw surface, whereupon he hesitated and would probably have changed his mind had it not been for the intervention of his lady, who, though as sentimental as he, argued that the animal ought to be relieved of that burdensome inconvenience. Yielding to her humane entreaty, he consented to have it done.

On March 28th, I passed a 4 millimeter caliber rubber tube around the growth as close as possible to the olecranon, pulled it as tight as it would stretch and united the ends with two knots. To facilitate matters, the groom had to take hold of the tumor, draw it from its origin sufficiently so that the string found a position between the tumor and point of attachment to prevent its slipping. During this manipulation the horse stood perfectly still. He was then returned to the stable, tied right and left to prevent his molesting the part under treatment, but in such a manner as to allow him to lie down on a good bed of straw. He was fed on soft food and grass and led around every day.

From the third to the fifth day some swelling, tenderness and increase of temperature set in. A loosing of the hair, baldness of the skin, oozing of some serum around the string and foetid odor was also observed.

The rim around the ligature was dampened once per day with pure phenylic acid by means of a feather point. On the thirteenth day three fourths of the tumor was detached, and that which still adhered was so tough that I concluded to sever it with the knife, and found that this tissue instead of being sarcomatous was of fibroid duration, necessitating the dissecting of an additional small piece reaching from the cut edge of the

wound toward the center which caused a slight hæmorrhage, and, though it did not amount to much, it was unpleasant, inasmuch as I had given the owner to understand that I would perform it without loss of blood. The almost level wound, measuring three inches in diameter, was now cleaned from blood, etc., dressed with phenylic acid and covered with a thin layer of cotton. Cotton is a feeble covering, still it together with the acid, helps keep out insects and dust.

The animal was then tied short for three days and nights to protect the elbow against harm and the phenylic acid application repeated as often as necessary to prevent excrecence. The hairy edge around the wound was oiled twice daily to prevent the cotton from adhering to it.

After a few days, the raw surface began to fill, particularly the spot where the fibroid growth had been dug out, so that caustic potash had to be resorted to. This was applied only superficially on the largest, level space, while the seat of the fibroid required its application several times within ten days and twice I made use of a few drops of saturated solution of chromic acid, which stopped the rebellious excrescences on the fibroid hiatus. From the 17th day solution resorcin and dermatol were applied in rotation until cicatrization was completed which was about the ninth week.

This case would hardly be of any special import, its course being almost the same as the first, had it not been for the fibroid tissue which proved to be more tenacious for the ligature to cut through, than through the other three fourths. By applying another elastic tube of smaller dimensions, and giving it about two days time to constrict, this remaining fourth, my prognosis would have been confirmed, but allowing it to bleed, which might have been so easily prevented, it was somewhat weakened and should serve as a reminder never be too positive in expressing a prognosis.

There is an almost unanimous opinion prevailing among veterinary practitioners, that the treatment of shoeboils, is, as a rule, unsatisfactory even when operated upon by excision, the method

most commonly pursued up to the present time. Why our efforts are not oftener rewarded with better results, is in all probability due to micro-organisms occupying the bursa mucosa. Prof. Pflug describes the bursa mucosa as chamberlike (multilocular) which, in the normal state, can be inflated to the size of a middle sized apple; in a morbid condition, as in caulkboil, it may be two and three times as large. Should this intricately constructed sac be occupied by microbes, which is quite likely to be the case, it would be difficult to rid this network of them except by applying the elastic ligature, whereupon this bursa will necessarily drop off with the degenerated appendage. The surgeon then has an opportunity to do all possible good with therapeutics and will have little reason to be disappointed, provided he is not too chary about sacrificing the time to watch personally the progress of its course, for, in cases of this kind, it is not advisable to trust too much to attendants, for they are very apt to slack off in their attention as soon as they see any improvement, or if the patient is doing so well as they would like to see, often know of a better remedy, or a better doctor, which possibilities must be guarded against.

SOCIETY MEETINGS.

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of the association was held at the Hotel Rennert, on Tuesday, July 24th, at two P. M. In the absence of the president the meeting was called to order by the secretary. Dr. Wm. H. Dougherty was elected chairman *pro tem*.

Drs. Dougherty, Lloyd and Clement responded to the roll-call. Dr. Robert Ward was present as a visitor.

The secretary read a letter from Dr. Stewart E. Paulet, tendering his resignation on account of its being impossible for him to abide by the code of ethics. It was voted to accept Dr. Paulet's resignation. The secretary also read a letter from the secretary of the Virginia State Association to this association, extending an invitation to the meeting at Norfolk in August.

I was voted to thank the secretary of the Virginia association for his kindness, but that it would be impossible for us to send delegates to the meeting.

Dr. Clement read a paper on "The History and Purposes of the Association," which was well received by those present.

The meeting then adjourned. A. W. CLEMENT, *Sec.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The regular August meeting of the Veterinary Medical Association of New Jersey, was held at Sanger Hall, Newark, N. J., August 9, 1894.

Meeting called to order by the president at 11.45 A. M. Thirteen members present at roll-call. Visitors one, Dr. James B. Raynor, delegate from Pennsylvania State Association.

The president's address was on subjects of much interest to the association.

Secretary's and treasurer's reports showed the association to be in a flourishing condition.

The legislative committee reported "defeat," as they failed to get the bill passed to pay for the cows killed with tuberculosis. One of the members read a circular of Dr. Cooper's, of Trenton, with the names of twelve of the members names of this association as references printed in large type. The president appointed a committee of three to censure Dr. Cooper for using the names on a patent medicine circular without their knowledge or consent. A committee of three was also appointed to revise the by-laws of the association, as it was decided to hold but two meetings a year instead of three, as at present. The president urged the members to use their influence to stop the indiscriminate docking of horses tails. Dr. Raynor then spoke on the subject of "Cruelty to Animals," showing how our legislators would pass stringent laws for said society, giving unlimited power to some of their ignorant agents, while they ignore the pleadings of the veterinarians to give them power to try and exterminate some of the more dangerous and loathsome diseases, which would not only alleviate the sufferings of animals, but of

the human family as well. The day being very warm, the essayists were excused till the December meeting, and the time occupied by the members in reporting cases and their treatment. All declared it to be one of the pleasantest meetings ever held.

Adjourned to meet in Trenton the second Thursday in December.

S. LOCKWOOD, *Sec.*

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The Indiana Association of Veterinary Graduates met at the Agricultural Rooms, State House, on July 12th.

The meeting being called to order by the President, Dr. J. E. Cloud, in the chair, with the following members present: C. M. Stull, F. A. Balser, H. R. McCaulay, G. H. Roberts, J. W. Klotz, C. F. Bell, W. Carnes, J. E. Cloud, J. C. Rodger. Honorary Members, T. L. Armstrong. Visitors, G. R. Christian, W. B. Craig and J. Crail. In the absence of the Secretary, Dr. J. H. Honan, Dr. Balser, moved seconded by Dr. Bell that Dr. J. C. Rodger act as secretary.

The Board of Censors being absent, it was moved by Dr. Bell, seconded by Dr. Balser, that the president appoint a board to act at once. The president appointed Drs. Bell, Balser and McCaulay.

The following gentlemen's names were proposed for membership: Dr. Bell proposed J. O. Gleeson, of Kokomo, and J. Crail. Tipton, Ind. Dr. McCaulay proposed the name of W. B. Craig, of Indianapolis; Dr. Balser proposed the name of R. J. Hall, of Rushville, Ind. The Board of Censors being satisfied that the above gentlemen were qualified, a ballot was taken which resulted in their election.

After some minor business was transacted it was moved and seconded we adjourn till 7.30 P.M. The evening session was called promptly on time by the president, who ordered the report of the secretary read, which, after being read, was adopted. The report of the treasurer, Dr. Balser, was read and accepted by the association. The question in regard to the Indiana Veterinary College, that had been laid on the table at the previous meeting

in Fort Wayne, was brought up and discussed by members of the faculty, Drs. McAuley, Armstrong, Craig and Roberts. Moved by Dr. Bell, seconded by Dr. Balser, that the Indiana Association of Veterinary Graduates, as a body, recognize the Indiana Veterinary College, situated in the city of Indianapolis, Ind., under its present management. The motion was carried unanimously. Moved by Dr. McAuley, seconded by Dr. Balser, that no one holding a diploma and claiming to be a graduate of the Indiana Veterinary College prior to the year 1894, will not be recognized by the association. Carried. Moved by Dr. McAuley, seconded by Dr. Balser, that we meet the second Tuesday in December.

Dr. Balser, of New Castle, read a paper on "Dairy Inspection,"* which was ably discussed by all the members present. Moved by Dr. Bell, seconded by Dr. Balser, that a committee of three be appointed to confer with the State Board of Health. The president appointed Dr. Rodgers, Dr. Balser and Dr. Craig. Moved by Dr. Rodger, seconded by Dr. Klotz, that we adjourn until 9 A. M., to-morrow morning.

The meeting called to order by the president in the chair. Dr. W. E. Carnes, Washington, Ind., then read a well-prepared paper on "Is Tetanus Due to a Germ,"† which was discussed pro and con, but all agreed that we do not have any idiopathic tetanus and that it does not exist. Governor Matthews then made a short address to the members of the association, which was very gratefully received by the members present. A paper was then read on "The Veterinary's Relation to Client,"‡ written by Dr. T. B. Pote, Terre Haute, but owing to the inability of the doctor to be present, the paper was read by Dr. H. R. McAulay. A paper was then read by Dr. J. C. Rodgers on "Bills and Collections." A vote of thanks was then tendered the members who furnished the excellent papers. The meeting adjourned to meet at Anderson, the second Tuesday in December, 1894.

J. C. ROGERS, *Secretary pro tem.*

* Published in this issue.

† Published in this issue.

‡ Published in this issue.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Virginia State Veterinary Medical Association was held at the Atlantic Hotel, Norfolk, Va., August 15, 1894. There were present Dr. W. H. Harbaugh, president; Drs. E. P. Niles, T. A. Donaldson, J. H. Adamson, J. T. Bushman, George C. Faville, Wm. T. Gilchrist and others. This society was incorporated by Act of the Legislature during its last session, and the growing interest among the veterinarians of the state in questions of interest to the association is encouraging. Many subjects were brought forward for discussion that were of importance.

The Committee upon Statistics made a partial report which was interesting. Through this committee was reported a case of weak knees in a stallion, "which seems to have contracted the weakness from the sire, whose offsprings are noted for the same trouble." Cases of hereditary periodic opthalmia were reported and the question raised as to whether mules ever go blind from this cause. There were several cases of hereditary rheumatism reported from the same committee. In the discussion Dr. Niles advanced the idea that rheumatic affections are to be classed with the malarial disorders.

The Committee on Resolutions reported as follows:

Whereas, The Veterinary Medical Associations of the different states and the United States Association discountenance the use of specific remedies and the endorsement of such, and

Whereas, It is impossible to properly diagnose diseases by mail. Therefore be it

Resolved, That this association disapproves of the endorsement of specific medicines by certain veterinary colleges.

Resolved, That the association discourages answering queries in the various agricultural and other papers under the head of "Veterinary Editor."

These resolutions were adopted. Dr. M. D. Hoge, M.D., of Richmond, and Dr. Drake, of Leesburg, were elected to membership.

Dr. George C. Faville was elected secretary of the association. After the transaction of other routine business, Dr. Faville read a paper on "Maladie du Coit," which was listened to with much interest. The paper was illustrated by specimens that

were procured during the work of stamping out this disease in Nebraska. After a recess for supper, the association was called to order at 8 o'clock P. M., to listen to a very interesting paper on "Tuberculosis,"* by Dr. E. P. Niles, of the Agricultural College at Blacksburg. This paper was followed by a spirited discussion.

The fact that the veterinary profession is small in numbers in this state, and that the state is crowded with empirics, who fail to appreciate the gravity of this disease, is very apparent.

The fact that a so-called veterinarian had given a certificate of health for a large dairy in Richmond was shown by the published certificate which is used as an advertisement. Speaking of this particular inspection, Dr. Harbaugh said, "I was informed that this inspector examined about one hundred cows in a half hour, and pronounced them free from tuberculosis. I have made inquiries and failed to find a single instance where he tested with tuberculin." After full discussion the following resolutions were adopted.

Whereas, Tuberculosis is in most instances occult in its manifestations, and

Whereas, Inspections as generally made at the instance of interested parties are inefficient and practically worthless, and

Whereas, The prevalence of tuberculosis in our dairy herds is alarming in its extent and fearful in its influence upon the health of the consumers of dairy products, and

Whereas, Owners of dairies in this state have published certificates from so-called Veterinary Inspectors, giving clean bills of health for their dairies, which are misleading to the consumers of milk and absolutely worthless as a guide for the public. Therefore be it

Resolved, By the Virginia State Veterinary Medical Association, that we deplore the lack of information that the general public has upon this question.

Resolved, That we unqualifidly condemn the granting of certificates of health for dairies by unqualified men or after superficial examinations.

Resolved, That it is the opinion of this association that no inspection of any dairy is of value unless made by a qualified veterinarian under municipal or state authority.

After a general discussion, lasting until the "wee sma' hours," the association adjourned to meet in Charlottesville, on January 3, 1895.

GEORGE C. FAVILLE, D.V.M., *Sec.*

* Will be published in our next issue.

OBITUARY.

CHARLES B. MICHENER, D.V.S.

We are late possibly in taking notice of the death of this worthy veterinarian, but absence from the country and newspaper notices received only more than a month after the sad event, is the only excuse for our apparent neglect.

The newspapers and the professional journals have said all that could be said of interest to the public about Dr. C. B. Michener, they have recalled his graduating to the New York College of Veterinary Surgeons, to the American Veterinary College, *his true alma mater*, to which he became attached afterwards as professor of obstetrics, materia medica and therapeutics. His official life in connection with the work of the Bureau of Animal Industry, and his last relation to the National Veterinary College. All of these have been recalled—but to us remain the pleasantest duty to say one word of him, who as a man of intelligence and ability, could have expected to reach the highest professional veterinary honors one could deserve in this country,

A student of one of the hardest workers in veterinary medicine on this continent (Dr. I. Michener, his father), Dr. C. B. seemed to be possessed of even greater ability than his preceptor; as a student (as we first knew him) he was one of the first in his class, as a practitioner he was most satisfactory to his employer, and as a teacher but few will be superior to him in his delivery and his manner of conveying instruction to those who listen to him.

Of his faults no one has to judge, but as a veterinarian and a man of great ability, Dr. C. B. Michener stood amongst the first of his country.

His diploma at the American Veterinary College is dated February, 1876.

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

SOCIÉTÉ CENTRALE DE MÉDECINE VÉTÉRINAIRE.—We have received a notice of and invitation to be present at the celebration of the fiftieth anniversary of this society—the Veterinary Society of France at least, if not of the world—for among its members are found the names of veterinarians from every part of the globe.

It was with much regret that we could not accept of the kind call sent to us by the officers of the society—no doubt when among the exercises of the day we read of a discourse by President Sanson, of one by Mr. Leblanc on the life of Henry Bouley, of one of Prof. Arloing and one from Prof. Degives, the cream of the *élite* of the continental veterinary world, we felt how great our loss would be and how great our pleasure would have been, but how could we help it.

We hope, however, to receive some concise *comptes rendus* of this great meeting, and to present them to our readers, for it matters little whether this is a celebration in France—it is to all veterinarians who appreciate the value of the services rendered by such organization which has been recognized as one of

national public usefulness, a so-to-speak international celebration. We feel certain that when any of our national veterinary association reaches her fiftieth birthday, our colleagues in Europe and France will join us in their wishes as heartily as we do in the celebration of their own.

TO ALMA-MATER RESCUE.—When one enters a school from which he hopes to obtain a degree, a name, there is no doubt that he contracts towards that school moral obligations of great importance. And when once he has received his diploma, he, so to speak, becomes one of the family and the glory, the reputation, the name, *yes* the life of his alma-mater, must become one of his future anxieties while he is engaged in the efforts of the “struggle for life.”

Truly there are many instances where the well meant promises are soon forgotten. No doubt there are some who, once free from school attendance and duties, are too ready to forget the contracted obligations ; we mean moral obligations—but those we believe are the exceptions—and we personally know of one occasion where alumni proved themselves worthy of a better result in their endeavor in behalf of their alma-mater.

An example of a similar effort has recently been called to our attention, and it is so worthy that we feel it our duty to mention it to our readers.

We refer to the action of the Huron and Perth Veterinary Medical Association societies who have sent us the following invitation which speaks for itself and which we sincerely hope will meet with success in its undertakings :

LONDESBORO, September 1, 1894.

DEAR SIR.—We, the members of the Huron and Perth Veterinary Medical Association, have decided to hold a union meeting in the City of Stratford, in the City Hall, on the 27th and 28th of September, 1894, for the purpose of making a united effort toward procuring legislation favorable to the veterinary profession in this province. The assumption of the control of the Ontario Veterinary College by the government ; the appointment of the board of examiners for the said college by a medical council composed of qualified veterinarians, resident and practicing in Canada ; and furthermore, the raising of the college standard, and thus exclude illiterate persons from the ranks of the profession.

We respectfully ask you to give this matter your serious consideration. You, no doubt, recognize the evils existing under the present system. Believing that you do, we ask you to attend this meeting and assist us in securing your rights and ours.

There will be two sessions, the first on the evening of the 27th of September, at 8 o'clock P. M.; the second the following morning at 10 o'clock A. M.

Very truly yours,

W. R. CARR, V.S., *Sec'y for Perth,*

Kirkton P. O.

J. J. WALKER, V.S., *Sec'y for Huron,*

Londesboro P. O.

The action of these societies deserves the congratulations of the veterinary profession and commands the support of all the alumni of the Toronto school. To place the Ontario Veterinary College under governmental control, would not only mean a change in her management, not only an immense progress in veterinary education, but would be a well deserved recognition of Prof. A. Smith's work in behalf of the profession—a recognition that the worthy principal ought to be proud and anxious to obtain.

A FRIEND'S RETURN.—It is always gratifying to meet again after a long separation one for whom you were used to watch, and whose company you enjoyed, and how much greater was the satisfaction when that friend came back improved generally in appearance and in constitution.

Such has been our feelings, and we are sure will be those of many, when like us they will receive the number of the *Journal of Comparative Medicine and Veterinary Archives* for September.

You are welcome, old friend, and let us hope that the introduction to your editorial staff of the young and enthusiastic blood that we all know well, will prove to you the lease of a long, useful and uninterrupted existence, and that we may enjoy your company for ever.

COMPLIMENTARY NOTICE.

"The . . . Veterinary College, an advertisement of which appears in another column, will commence the session of 1894-95 on October the —, and we can assure our readers that the instructions imparted at this thriving institution are second to none on the continent of America, and indeed equal those of the leading colleges of Europe."

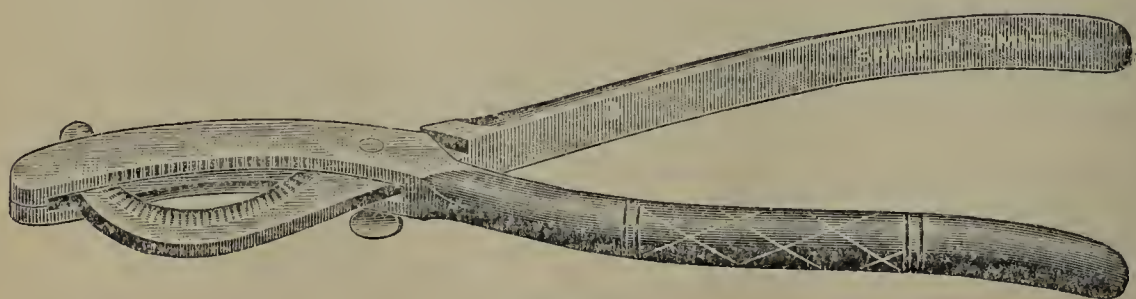
This was sent to us by the principal of that institution with request to insert it in the REVIEW, as a complimentary notice, red ink printing across the original.

Of two things: we knew the claims to be correct, or to be erroneous. In the first case, it would have been unnecessary to publish a fact which all of us veterinarians would have known of. In the second case, the writer must have had a mighty poor opinion of American veterinary journalism to entertain the idea that because for the price of an "ad" an editor would lower its character as to recommend what he knew to be an untruth.

No, Mr. Principal, we cannot comply with your request, even if you draw your "ad" from our pages; but certainly we will never induce our candidates to veterinary education to enter your school with such a notice as the one you send us as long as there will be, as there is already, many other institutions far ahead of yours in their endeavors to bring the profession to the standing it is entitled to.

The struggle for improved education which has been inaugurated by some of our schools in North America is too severe, has required from them too powerful efforts to see the result jeopardized by inducements similar to those represented in your complimentary notice.

NEW INSTRUMENTS.—It is not common for our instrument makers to call our attention to any of the new means which may be brought out of their industry for use in our practice, and



while we may be accused of booming a firm or its products, we take pleasure in calling the attention of our readers to the *modified emasculator*, which has recently been offered by the house of Sharp & Smith of Chicago. We have not had oppor-

tunity to try the new instrument, but from what we have heard of it, it seems to answer all the purposes and gives all that its inventor promised, viz., "that it is the best on the market at present." Test it, that is the best proof of the value of the claims.

CORRECTION—*Surgical Treatment of the Diseases of the Hock Joint.*—Prof. Zuill sends us a correction for an omission made in the composing room in the above named article. The article was published in the July issue, and at the bottom of page 250 the following ought to be inserted between the last two words "hock lame" and the first "ness" of page 251.

ness, it remains for us to examine the chronic form of the disease.

Chronic Hock Lameness.—In this form of the disease there are two conditions which may produce lameness, and when we have an old spavin without this manifestation we may be sure that neither exists. The first and by far the most frequent causes of chronic hock lame.

ORIGINAL ARTICLES.

ADDRESS DELIVERED AT THE OPENING OF THE M'KILLIP VETERINARY COLLEGE.

BY OLOF SCHWARZKOPF.

Mr. President, Ladies and Gentlemen.—Whenever a new institution of learning opens its doors to the great public there ought to be rejoicing. The diffusion of useful knowledge of whatever kind and in whatever direction adds so much to the enlightenment of the people and is always welcome. Many are the Universities, Colleges, and schools which are spread all over this great and growing country. Sciences and arts are taught liberally everywhere, and their disciples abound in numbers from one end of the country to the other,

But there is one science which, from reasons rather difficult to explain, has been sadly neglected in our country; this is the science of veterinary medicine and surgery. Not further back

than thirty years a veterinary college was unknown in the United States. The first attempt to establish such a college in Boston proved a failure. In these times that peculiar empiric, termed "horse-doctor" in Shakespearian language had his sway, and applied his crude and cruel devices in the treatment of the various diseases of our domestic animals, a treatment which so often has called out the disgust and contempt of intelligent people.

Not until the disease known as pleuro-pneumonia made its inroads into fine herds of cattle of our country, mercilessly destroying many thousands of them every year, did the public and state and national authorities realize the need and recognize the value of a veterinary surgeon with a scientific education. At this time several well prepared men went abroad to study at the old veterinary schools of Europe, and returning they, with a few foreign veterinarians, laid the foundation for the veterinary profession of this country. Soon one veterinary school after another came to life, and to-day some of our proudest Universities, such as Harvard, McGill, and the University of Pennsylvania are anxiously improving their veterinary departments. There are other veterinary schools started and maintained by private enterprise. Two or three of these are first-class schools, but the most of them are of a very inferior type. This is the status of veterinary education as it is at present.

One need not be a prophet in order to predict a bright and prosperous future for veterinary science in this country. Its usefulness has been sufficiently demonstrated and its rapid development has overreached the highest expectation; still of late some unexpected events have given to this science a stronger impulse. The energetic stamping out of pleuro-pneumonia by the veterinary advisers of our national government is being favorably commented upon all over the world. The passing of a law by Congress for the inspection of meats for exportation to Europe, has given the American veterinarian an official recognition. The execution of this law is a practical success and an incalculable benefit to a vast home-industry. But nothing has

been of greater importance to veterinary science than the discovery of Robert Koch's of world's fame, that tuberculosis or consumption is an identical disease in man and animals, and that the disease is disseminated from animals to man by the use of milk and meat. This fact, grave as it is, is apt to bring about a great change in sanitary science. Already now many of our great cities are hurriedly engaging scientific veterinarians to inspect and superintend their dairies and slaughter-houses in order to protect the health of the citizen. Thus the point has been reached, where the veterinarian steps in as a sanitarian, not only preserving the health of domestic animals, but also guarding the well-being of the human race as well.

In the face of these facts alone, if not from several others, it is evident that there will be in the future a good demand for the thoroughly educated and competent veterinarian, and any veterinary college which can supply such demand will be in demand in itself.

This college which opens its doors to you to-day, young gentlemen, will strive to be one of higher veterinary education. Our facilities are grand. We are located in a world-renowned city, the heart of a great nation. We have a college building which already now in its incomplete form, is superior to any in the country. While in our infancy we open with better facilities for work, than any other college has ever done before us. But above all the spirit of the man who is the genial founder and father of this new institution, will surely guide us along the path of wise pursuits. I cannot refrain at this moment to publicly express my admiration for the man who had the energy and enterprise to bring to life this new college for Dr. M. H. McKillip. With clear sight he has outmapped his plans and with the energy which is his he has pushed them to perfection. The greatest appreciation and the thanks of the whole veterinary profession, of which you are so worthy a member, are due you, Doctor, for your undertaking. May this college become the best in the country, and so success crown your effort.

To you, gentlemen, of the faculty, I wish to appeal for your

generous assistance and faithful performance of the work which we have carefully laid out as our course of study. You are men who have had the advantage of higher education, and the experience of years of practice, such as professors should have. May your teachings be fruitful.

To you, gentlemen, our first class of students, numbering sixteen to-day, I bid a hearty welcome. You have passed a rigid entrance examination, proving that you are capable to study, and intelligent enough to follow our lectures with satisfaction and good results; that you have a sufficient degree of culture to carry yourselves as gentlemen and so preserve the good reputation which this new college bears.

Let us all then, the faculty and students, work together earnestly and harmoniously, and let us join hearts and brains to make this an institution from which true knowledge may flow.

In the name of the founder of this college, I herewith declare it open to all worthy young men who may seek the knowledge which we can give.

NEURECTOMY AS A PRACTICAL OPERATION.

By PROF. S. J. J. HARGER, of the University of Pennsylvania.

In veterinary surgery, we find a vast field which is still unexplored. We find, among the list of major surgical operations many which we perform, as it were, empirically, without inquiring what the actual results in a large number of cases are or what percentage are successful. One of these is neurectomy. The term *neurotomy* is generally misapplied. It simply means a section of the nerve, whilst the word *neurectomy*, which is the correct one, means a resection of a portion of the nerve trunk, as it is ordinarily practiced. I have always been an advocate of this operation, but not unjustly so, and have always advocated it without reservation whenever the indications called for it; in fact, so much so, as to cause sometimes a smile of amusing comment from some of my professional friends whenever I did so. I

do not propose to enter into many theoretical details on the subject, but rather consider it from its more practical aspect.

Great diversity of opinion exists among professional men as to the value and the results that are to be obtained from neurectomy. Some recommend it very indiscriminately, for all varieties of lesions, without first inquiring into the proper indications; this has necessarily militated against its application and brought it into disrepute. If the surgeon misapplies it, if he practices it when it is contra-indicated, not the operation but the operator should be blamed. Others, very ill-advisedly, discard it almost entirely, and say to the owner "better sell your horse." It is this diversity of opinion which has led me to write this paper.

Various nerve trunks are selected according to the end in view: the *tibial* nerve in stringhalt; the *sciatic* for lesion below the hock, when it is resected about four inches above the point of the hock and opposite to the anterior border of the tendo-Achilles; the *median* for lesions between the knee and the fetlock; the *plantar* and the *digital* for diseases below the fetlock. I shall only speak of the last three.

Plantar Neurectomy.—Indications. One should not be too hasty in operating, for I have often seen cases in which navicular disease, existing for several weeks to several months, was diagnosed, and recovery followed the use of a foot-bath, a mild liniment, or "turning out" for a few weeks. The typical indication is a chronic disease, with pain and lameness, but no mechanical obstruction. Two conditions must here be considered: 1. The accuracy of the nerve supply to the diseased area; 2. Is the lameness mechanical or is it the result of pain?

Neurectomy is practiced in ringbone, sidebone, contraction of the hoof, primary and secondary, inflammatory conditions of the lamina and the velvety tissues from traumatism, laminitis, lesion secondary to street-nails, keraphilocoele, quittor operation, etc. Its principle indication is the so-called chronic navicular arthritis. Any acute inflammatory condition is always a contra-indication.

Operation.—The *modus operandi* is well known to all of us

and hence I need not go into the didactic details of the routine surgical stages. I have used cocaine, for the last four years, instead of casting the horse. A drachm of a 4 % solution in distilled water is injected subcutaneously above the fetlock over the course of the plantar nerve. In only two instances was it necessary to throw the patient. In a double neurectomy one foot is nerved before injecting the other, to avoid the physiological effects of the drug from its absorption, which sometimes makes the horse uneasy and complicates the operation. In my experience, I have never seen the sloughing effects of cocaine, which some claim to have experienced. In this manner, the foot can be extended, placed upon a box or a stool and held by an assistant, and the nerve removed without any laborious efforts. In fact, some horses never move, even while severing the nerve.

The only instruments necessary are a pair of curved scissors, two small dissecting forceps, a bistoury, a thin probe with a sharp but not cutting extremity, a neurotome and needle and thread or silver wire. I never use a tourniquet or compression of any kind to arrest the hæmorrhage, which is insignificant when the incision is made carefully and in the proper place ; on the outside of the foot the operation is sometimes absolutely bloodless. I do not approve of the use of Dechamp's needle nor of securing the nerve with a thread. This prolongs the operation and may cause the horse to struggle. I simply pass the probe under the nerve-trunk after dissection with the forceps and then make the section. The nerve should be well isolated at the upper angle of the incision, and strong downward traction made before cutting it, in order that it does not protrude into the wound and its extremity is not involved in the cicatrix. I always use a cutaneous suture. In this manner a nerve may be removed in a fraction of a minute. As long a portion of the nerve as possible should be removed.

The only structure that can be mistaken for the nerve and only in the low operation, and even this is not excusable, is the ligamentous cord extending from the plantar cushion to the

ergot and obliquely crossing the direction of nerve in the middle of the side of the first phalanx. Drawing the thumb nail over the nerve trunk before section or the cross-section, as well as the white color and the striation remove all doubt. The connective tissue should be irritated and torn as little as possible.

Prognosis.—The *prognosis* varies with the disease for which the operation is performed. In an ordinary case of navicular disease it is favorable; in those cases in which there is an intense chronic lameness of long standing, contracted tendons and ligaments, the animal is hollow chested, and the inflammatory changes in the perforans tendon are such that the latter is weakened at its attachment to the os pedis, the prognosis is less favorable. It is *good* in ringbones when there is no anchilosis; also in sidebones in which the low operation suffices in mild cases, but the high is necessary in the aggravated forms. In laminitis the prognosis good only in very chronic cases, when the inflammatory conditions have disappeared and the deformity of the foot is not too marked. In general, the smaller the diseased area, the less acute and the less advanced the pathological alterations in the tissues, the more favorable is the prognosis. In acute or subacute, and in many instances of chronic laminitis, I would at any moment expect the separation of the hoof. Also is the prognosis more safe for the low operation than for the high. Again, consider the conformation of the foot. In flat-footed, thin-soled, low-heeled feet much predisposed to the effects of concussion and bruises, and in narrow and contract hoofs an opinion must be more guarded than when the exterior form is normal. Again, the nature of the work done by the animal, the pace and the conditions of the roads have their influence.

Median Neurectomy.—*Median neurectomy* or section of the median nerve of the brachial plexus, was first practiced by Peters, of Berlin, in 1885, in the treatment of inflammatory alterations of the tendons in the region of the canon and chronic lamenesses in the foot.

The *modus operandi*, which is slightly more complicated

than in the plantar operation, simply involves the same general principles of surgery and an accurate knowledge of the anatomical relation of the parts. The nerve, situated more or less deep, accompanies the posterior radial artery and vein which must not be injured. The section is made at several points :

1. On the inner side of the elbow, at the elbow joint, where this nerve passes over the internal lateral ligament; at this point the nerve is covered by the sterno-aponeuroticus muscle.

2. At the upper part of the inside of the forearm before giving off the large branch to the posterior muscles of the forearm.

3. At about the upper fourth of the forearm after giving off the above branch. I prefer the last point of operation, because the posterior radial muscles still retain their nerve supply which does not innervate the parts below the knee that are diseased. The incision must be made about one-half of an inch behind the internal border of the radius and about four inches from its upper extremity.

Unfortunately, I have not had much experience with this operation ; but reasoning from the anatomical nerve distribution, and this seems to be the general concensus of opinion, it is not to be recommended from our present knowledge for troubles situated below the fetlock, such as ringbone and navicular disease. It does not completely remove the sensibility on the outside half of the foot, and hence a variable amount of lameness may remain because the external plantar is partly composed of fibres from the ulnar.

The principal indications of this operation are lesions of region of the canon, such as chronic thickening, contraction and inflammation of the perforans, its check ligament, the perforatus, the suspensory ligament, and in those unremediable posterior splints involving the preceding structures. In the thickened and contracted tendons of the draft-horse it has been especially successful and rendered the horse entirely useful.

Below is the table showing the results of several operators :

TABLE.

[illegible]

Some of the above cases have been followed as long as a year and over, and the animal was still able to do his usual work.

Complications and Sequelæ of Plantar and Digital Neurectomy.—Injury to collateral artery of the canon and the digital arteries and veins or the metatarsal veins may result in degeneration of the foot.

1. Recurrence of the lameness may take place in from one month to several years. In fact, the horse may not go sound at any time after the operation. Again the lameness may continue for some weeks afterwards and then disappear. This I have seen in several cases. The recurrence or continuance may result from one or more of three causes :

a. Errors in Diagnosis.—I have no doubt but what some very obscure lamenesses are often mistaken for navicular trouble, even in some of those cases perhaps, which I have classified in this paper. The animal is nerved, and the operation is condemned.

b. Recurrent Nerve Supply.—M. Arloing has demonstrated in the plantar nerves of the horse recurrent fibres which establish peripheral relations between the branches of these nerves and the nerve trunks. Some of the fibres instead of terminating in peripheral corpuscles or plates in the diseased tissues, make ascending loops and reach the main trunk, through the collateral branches. Given a section of the digital nerve, the posterior terminating branch of the plantar nerve below the fetlock, the recurrent branches coming from the diseased part return by way of the collateral branches given off above the point of section, and thus a certain amount of sensation in the parts below is retained. This distribution influences the degree of lameness which remains.

c. Regeneration of the Nerve.—The nerve tissue may regenerate itself at the central end and the two extremities thus attain physiological union. The time required for this process varies according to, or at least is modified by, the length of the portion excised. After simple section, it follows in about a

month to six weeks; after excision two months to several years, an average, as generally quoted, of one to two years. The distal end becomes atrophied. The nerve regeneration is sometimes very imperfect, which may account for some cutaneous sensibility and the continued integrity of the foot, without manifesting any lameness. On the other hand the nerve may never regenerate itself, the intervening space being occupied by a band of cicatritial tissue. This is the ideal.

2. *Effect upon the Gait.*—In navicular disease, if the perforans has not contracted adhesions, and the other parts of the foot are normal, digital or low, neurectomy has little or no influence upon the gait. If the lesions are chronic, the gait stilty, the animal frequently stumbles and the tendons and ligaments have become rigid and contracted, the movements will not be as free as in the normal foot. Trotting and running races have numerous neurectomized contestants which win races in fast time. Even in saddle horses, the operation in many instances has been most successful. The high operation does sometimes interfere with the speed, although the running turf has innumerable instances of such horses that are bread-winners. In fact, one would be surprised at the number of race horses that have been nerved.

3. *Growth of the Hoof.*—After section of the nerve, the horn is secreted more rapidly. The foot is apt to be high-heeled and long-toed; the wall and sole are thicker, sometimes twice the normal thickness. Shoeing should be more frequent. After the low operation the foot often approaches the normal in shape and the heels spread.

4. Accidents from pricking, street-nails may be more frequent, but this is very insignificant. I have seen cases in which the quarter and portion of the sole were separated by suppuration from picking up a nail and had to be removed, but a good recovery followed. Such was a fact in case No. 10 of my operations.

5. *Degeneration of the Structures of the Foot and Separation of the Hoof.*—It was my intention to speak in detail of the phy-

siological phenomena of the degeneration of the foot ; but I could not obtain all the necessary data in time, and will reserve this subject for an article to be published in the near future. Brown, Sequard, and Chauveau have severed the sciatic nerves of rabbits without any retrograde phenomena in the leg. The first in the tissues is a vaso-motor paralysis which is only temporary and disappears in the course of three or four days. The pathological changes in the foot, according to my observation, seem to be of an inflammatory nature—a suppuration inflammation. The causes of this condition may be two-fold ; the trophic influence of the nerves and traumatisms. The former is the predisposing cause, but at times may be the direct or exciting cause ; the latter is the exciting cause. By traumatisms I do not only mean accidental injuries, but those which result from the ordinary function of the foot. Injuries to the skin of the nerved foot heal with difficulty. I have seen the foot suppurate in consequence of a blister applied to the coronet. Beyond this, I shall not discuss the question here.

Neuroma.—These are true and false. The latter is a neurofibroma and seldom cause lameness. The treatment is excision.

STATISTICAL CLASSIFICATION OF CASES.
HIGH NEURECTOMY.

1. Geld.	Navic. (sing.)	Operation,	1880.	1885 sound.	5 years.
2. Mare.	" "	"	1890.	"	1 year.
3. Geld.	Lame both feet.	2d operation,	1891.	Sound when seen last.	6 months.
4. "	Ringbone (post.)	Operation,	1887.	Permanently sound.	5 years.
	" (ant.)	"	1890.	" "	1 year.
5. "	" (post.)	"	1890.	Died from tetanus.	
6. "	Navic. (double)	"	1882.	Permanently sound when seen last.	1 year.
7. "	" "	"	1883.	Sound when seen last.	2 months.
8. "	Acute laminitis.	"	1883.	Tendons broke down.	2 months.
9. "	Ringbone (hind)	"	1886.	Partially sound.	
10. Grey pony	Navic. (sing.)	Both arteries cut.	1886.	Neuromas, broke down.	
		Operation, Nov., '88.		Bad.	Foot sloughed
		" Aug., 1891.		Still sound.	Unsuccessful.
				Two years ago had suppuration of quarter and sole.	
11. Geld.	" "	"	Apr., 1891.	Sound.	4 years.
12. "	" "	"	June, 1892.	Still sound.	1 year.
13. "	" "	"	Oct., 1892.	Did well for	Foot sloughed
				Lame from neuroma. Removed.	2 years.
14. "	" "	"	Aug., 1892.	Still sound.	6 months.
15. "	" "	"	Feb., 1889.	Still working.	not doing well
					2 years.
					5½ years.

HIGH NEURECTOMY.—*Continued.*

16. Mare.	Navic. very lame	Operation, Feb., '89.	Lost foot in	8 months.
17. Geld.	"	" Apr., 1889.	Did well.	
18. "	"	" " "	Did very well.	
19. Mare.	"	" " "	Still working.	5½ years.
20. "	"	" May, 1889.	Did well for	2 years.
21. Geld.	"	" " 1889.	Not lame; still driven.	5½ years.
22. Mare.	"	" Nov., 1889.	Did well until owner died. Sold as sound.	
Forseman	"	"	Still in use.	5 years.
23. Geld.	" (double)	" Dec. 1889.	Did extra well.	5 years.
24. "	"	" Jan., 1890.	Good worker for	2 years.
25. "	"	" Feb., 1890.	Sound.	1½ years.
Forseman	"	"		
26. Geld.	" (double)	" Apr., 1890.	Then lame.	
27. "	" "	" May, 1890.	Did well.	
28. "	"	" " "	Worked in city for two years, and still on farm.	2 years.
29. "	Throughbred.	" Aug., 1890.	Won two races, and sold one year later.	1 year.
30. "	Navic. (double)	"	Very well for two years when sold.	2 years.
31. "	"	" Sept., 1890.	Driven for two years, then sold.	2 years.
32. "	"	" Feb., 1891.	Still at work.	3½ years.
33. "	"	" " "	Sold for large price 1 year after.	1 year.
		" Apr., 1891.	Worked one year. Killed by accident.	
34. Mare.	" "	" " "	Broke down in one year.	1 year.
35. Geld.	" "	" May, 1891.	Still working.	1 year.
36. "	"	"	Mar. '94 died of spinal meningitis.	Broke down.
37. "	"	" June, 1891.	Did well: sold.	3 years.
38. "	"	" July, 1891.	Did well.	3 years.
39. Mule.	"	" " "	Still working.	
40. Geld.	"	" May, 1889.	Good; at work.	3 years.
41. "	"	" " "	Did well.	5 years.
42. Mare.	"	" " "	" "	
43. "	"	" June, 1889.	Still in use.	4 years.
44. Geld.	"	" Aug., 1889.	Did well for	5 years.
45. "	"	" Oct., 1889.	Well one year, then sold.	2 years.
46. Mare.	"	" Aug., 1887.	Serviceable.	1 year.
		" Mar., 1888.	Removed neuromas.	2 years.
		" " 1889.	Destroyed.	Breaking down.
47. Geld.	"	" Aug., 1887.	Diagnosis (?)	
Hart				
48. "	" (double)	" June, 1893.	Not lame at present.	1 year.
49. "	Ringbone (hind)	" " "	No improvement.	
	Very lame.	" Aug., 1893.	Destroyed.	
50. "	Ringbone (hind)	" May, 1894.	Not lame July 18th.	
51. Mare.	Sidebone (ext.)	" " "	Sound.	Sound.
	Very lame.			
52. Geld.	Navic. Very chronic & lame.	Ext. nerve. Operation, Jan. 1890.	May 23d.	Broke down.
53. "		" Apr., 1889.	In several months foot sloughed.	
54. Mare.	Chronic laminitis	" May, 1889.	Fall '89 not lame.	
55. "	Navic.	" Sept., 1891.	In one month feet sloughed.	
56. "	"	" Feb. 1892.	About nine months, then lame.	9 months.
57. Geld.	"	" Jan., 1891.	Relieved one year, July, '92, little sore.	1 year.
58. "	Ringbone.	" " "	After six months, lame.	6 months.
59. "	Sidebone.	" Feb., 1891.	No relief.	
60. "	Ringbone.	" " "	" "	
61. "	Navic.	" " "	Sept., '92, sound.	1½ years.
62. "	"	" Nov., 1890.	At present sound.	4 years.
63. "	"	" Dec., 1890.	Relieved about (lame)	1½ years.
64. "	Ringbone.	" July, 1892.	At present sound.	2 years.
65. "	"	" " "	Three months, then lame.	3 months.
66. "	"	" Sept., 1892.	Jan., '94, slightly lame.	1¼ years.
67. Mare.	Navic.	" June, 1889.	Apr., '90, good.	1 year.
68. "	" (double)	" Jan., 1888.	Jan., '90, good.	2 years.
69. "	" 3 years.	" July, 1892.	Still sound (June)	2 years.
70. Geld.	"	" 1881.		6 months.
71. "	" (recent)	" 1882.	Lost foot in fourteen days.	
72. "	" (chronic)	" "	Relieved.	2 years.
73. "	" (acute)	" 1890.	Lost foot.	
74. Mare.	"	" 1892.	Not lame.	

HIGH NEURECTOMY.—*Continued.*

		Operation, 1892.	Recovered from threatened separation of foot.	2 years.
75. "	Ringbone.	" " "	Sound for	1 year.
76. "	Navic. (chronic)	" " 1891.	Destroyed for street nail.	3 months.
77. "	" "	" " 1890.	Lost foot in	
78. Geld.	"	" " 1892.	Artery was cut. Lost foot.	
79. "	"	" Feb. '91, low	Slightly relieved.	
	"	" Mar. '91, high	Not lame, July. Degeneration of tendons.	Destroyed.
80. Mare.	Ringbone.	" Aug., 1891.	Not lame. Degeneration in foot in	3 months.
81. Geld.	Navic.	" " '91, low.	Little improvement.	
		" Sep., '91, high	No lameness. Perforans & perforatus ruptured in	4 months.
82. Mule.	"	" Feb., 1892.	Degeneration of foot in	30 days.
83. Geld.	"	" Mar., '92, low	Slight relief.	
	"	" Apr., '92, high	Dec. working daily. Not lame.	2 years.
84. Filly.	Congenital (?) ringbone.	" Apr., 1892.	Permanent, April, '94. Exostosis very much reduced.	2½ years.
85. Mule.	Ringbone.	" May, 1892.	Permanent. Working daily. Exostosis smaller.	2 years.
86. Geld.	Navic.	Oper., July, '93, low	Little improvement.	1 year.
		" Aug. '93, high	Permanent.	1 year.
87. Mule.	Exostosis on ext. side & phalanx.	" Sept., 1893.	August, '94, sound.	3 years.
88. Geld.	Ringbone (hind) 2d & 3d phlanx.	" Ex. & nerve.	Sound.	
		" Sept., 1891.	"	2 years.
89. "	Enlargement flexor tendons below fetlock.	" Oct., 1892.	"	

LOW NEURECTOMY.

1. Geld.	Navic.	Oper'n Sep., 1893.	Not lame.	1 year.
2. "	"	" Feb., 1886.	Not lame when last seen.	1½ years.
3. "	"	" Jan., 1891.	Not satisfactory. Sold 6 months after.	
4. Mare.	"	" " 1888.	Improved; became sore.	
5. "	"	" Feb., 1889.	Reoperated. Sold.	
6. "	"	" " "	Did well.	
7. Geld.	"	" " "	Improved and serviceable.	
8. "	"	" Jan., 1889.	Not satisfactory.	
9. "	"	" July, 1889.	Did well when last seen.	1 year.
10. "	"	" Oct., 1889.	Not satisfactory.	
	"	" July, 1889.	Passed as sound by veterinarian after.	1 year.
11. "	"	" Nov., 1889.	No history.	
12. "	"	" Oct., 1888.	Sound in '92.	4 years.
13. Mare.	"	" 1889.	Sound at present.	5 years.
14. Geld.	"	" Apr., 1890.	Unsatisfactory.	
15. "	" (double)	" Oct., 1890.	Destroyed for blindness.	2 years.
16. "	" "	" " 1892.	Sold as sound in six months.	
17. Mare	"	" Dec., 1888.	Lame afterwards.	
18. Geld.	"	" Apr., 1889.	Driving well.	5 years.
19. "	"	" Feb., 1890.	Still working.	4 years.
20. "	"	" " "	Sound for one year. Nerves reunited.	1 year.
21. "	"	" Apr., 1893.	Sound for one year. Nerves reunited.	1 year.
22. Mare.	"	" Feb., 1889.	Eight months after, lame.	8 months.
23. "	"	" Mar., 1890.	Five " " "	5 months.
24. "	"	" Apr., 1890.	Sound at present. Trotted in 2.40.	4 years.
25. Geld.	"	" Sept., 1891.	Sound.	8 years.
26. Mare.	"	" Mar., 1892.	Still sound.	2 years.
27. Stallion.	"	" Apr., 1893.	Several months.	
28. Geld.	"	" June, 1893.	Not lame till fall.	
29. "	"	" " "	In five months lame.	5 months.
30. "	" (double)	" July, 1893	Pacer speed. Not lame at present. Died in July.	1 year.

LOW NEURECTOMY.—*Continued.*

31. Geld.	Navic.	Operat'n, July. '93.	Not lame at present.	1 year.
32. "	"	" " "	" " "	1 year.
33. "	"	" Nov., 1893.	Sound at present.	1 year.
34. "	"	" " "	" " "	1 year.
35. "	" (double)	" " "	" " "	1 year.
36. "	"	" Jan., 1891.	Serviceable.	3 years.
37. "	"	" " 1893.	Relieved one year. Some return of lameness.	1 year.
38. "	"	" " "	Degeneration in 48 hours. Opposite foot sloughing from high up.	
39. "	" (double)	" " 1892.	Apparently sound.	2 years.
40. Mare.	"	" June, 1890.	Permanent. Foot better form.	4 years.
41. "	" (Saddle mare)	" " "	Permanent.	4 years.
42. "	"	" July. 1890.	Never entirely relieved. Serviceable.	4 years.
43. Mare.	"	" " "	Much improved.	
44. "	"	" " "	" " "	
45. Geld.	Side bones.	" Nov., 1890.	Slightly improved.	
46. Mare.	Navic.	" " "	Much improved.	
47. Geld.	"	" " "	Died in April, '92.	1½ years.
48. "	"	" Dec., 1890.	Permanently. Sold not lame.	3 years.
49. "	"	" Jan. 1891.	Serviceable.	3½ years.
50. Mare.	"	" " "	Slightly improved.	
51. "	"	" Feb., 1891.	Last May slight lameness.	3 years.
52. Geld.	"	" Mar., 1891.	Slightly improved.	
53. "	Fract. navic. bone.	" " "	Much relieved. Very slightly lame.	
54. "	Navic.	" Apr., 1891.	Permanent (January, '94). Not lame.	3 years.
55. "	"	" " "	Not lame. Sold December, '93.	2½ years.
56. "	"	" " "	Lame after sixty days.	
57. Geld.	"	" May, 1892.	Doing well.	2 years.
58. Mare.	"	" " "	" " "	2 years.
59. Mule.	Ringbone.	" " "	" " "	2 years.
60. Geld.	Navic.	" June, 1892.	Much improved, but slightly lame.	
61. "	"	" " "	Much improved.	
62. Mare.	Chronic laminitis	" July, 1892.	" " "	
63. Geld.	Ringbone (low)	" " "	Little improved.	
64. Mare.	Navic.	" " "	Sound.	2 years.
65. Geld.	Punctured sole.	" Aug., 1892.	" " "	2 years.
66. Mare.	Navic.	" Sept., 1892.	Serviceable	2 years.
67. "	"	" " "	Little lame.	2 years.
68. Geld.	"	" Oct., 1892.	No relief. Destroyed.	
69. "	"	" " "	Slightly improved.	
70. "	"	" Nov., 1892.	Much improved.	
71. Mare.	Ringbone.	" Dec., 1892.	Slightly lame.	
72. Geld.	Fract. 2d phal.	" " "	Working daily.	
73. Mare.	Navic.	" Jan., 1893.	Very little lame.	
74. Geld.	"	" " "	Greatly improved.	
75. Mare.	"	" Feb., 1893.	Killed.	
76. Geld.	Sidebones.	" " "	Very little improvement.	
77. Mule.	Low ringbone.	" " "	Little lame. Working.	
78. Geld.	Navic.	" Mar., 1893.	Greatly improved.	
79. Mare.	"	" " "	" " "	
80. Stallion.	"	" Apr., 1893.	" " "	
81. Geld.	"	" May, 1893.	Slightly relieved.	
82. Mare.	"	" " "	Greatly improved.	
83. "	"	" June, 1893.	Failure. Killed.	
84. Geld.	"	" " "	Sold. Improved.	
85. Mare.	"	" July, 1893.	Greatly improved.	
86. Geld.	Ringbone (low)	" Aug., 1892.	Not lame. Ringbone smaller.	
87. Mare.	Navic.	" May, 1891.	Not lame.	3 years.
88. Mule.	"	" June, 1891.	" " "	3 years.
89. Geld.	"	" " "	Little relieved. Became quite lame.	
90. "	"	" " "	Not lame.	3 years.
91. "	"	" Aug., 1891.	Slightly lame.	
92. Mare.	"	" Sept., 1891.	Slightly improved.	
93. "	"	" Oct., 1891.	Serviceable.	3 years.
94. Geld.	"	" " "	" " "	3 years.
95. Mule.	Sidebones.	" " "	Relieved December, '94. Slightly lame.	2 years.

LOW NEURECTOMY.—Continued.

96. Mare.	Navic.	Operat'n, Feb., '92.	Permanent. Not lame.	2½ years.
97. " "	Low ringbone.	" " "	August, '94, very slightly lame.	
98. Mule.	Navic.	" " "	Serviceable.	2½ years.
			Permanent. Not lame.	2½ years.
99. Geld.	"	" Mar., 1892.	Unsuccessful.	
100. Mare.	"	" Apr., 1892.	Slightly lame, but serviceable.	2 years.
101. Geld.	"	" " "	Slightly lame.	
102. Mare.	"	" " "	Still lame.	
103. " "	"	" " "	Sound six months when sold.	
104. Geld.	"	" Mar., 1893.	Sound eight months.	8 months.
105. " "	"	" Nov., 1893.	Permanently sound.	1 year.
106. " "	" (double)	" Aug., 1893.	" "	2 years.
107. " "	" "	" May, 1892.	Not Quite sound.	2 years.
108. Mare.	"	" " "	Perfectly sound.	2 years.
109. Geld.	"	" Aug., 1892.	Serviceable.	2 years.
110. " "	"	" June, 1893.	No improvement.	
111. " "	"	" July, 1893.	Sound ten months. Trotted many races.	10 months.
112. " "	"	" Oct., 1893.	Sound.	1 year.

For the collection of the statistics which form the basis of this paper, I am in a great measure indebted to some of my professional friends, among whom I take pleasure to mention Drs. Budd, Eves, Felton, Harker, Hart, Hinebauch, Michener, Muir, McKillip, Ridge, Rodgers, Schreiber, Sellers, Sensemen, Charles Williams, and W. L. Williams, most of whom share my opinion in this operation. I have requested these gentlemen to select their cases, good, bad, or indifferent, irrespective of the results, and have endeavored to collect them in such a manner as one would meet them in a general practice. The tables contain 231 cases, and indicate the disease, the time of operation, the result, and the termination when such is known. All cases date prior to January 1, 1894. Let me say these do not represent the whole of the favorable results, because many are recent, the animals are still sound or serviceable and may remain so for some years. Thus a case which in the table is of one year or two year's duration, and still sound may, if followed, be found to remain so for two or three years longer. This must be taken into consideration in formulating conclusions*.

Of the 231 operations, 128 are digital (low), and 103 plantar (high). In 226 of them, the age of animals was as follows:

* The author does not consider the word *sound* in its technical sense.

1.....3 years.	33.....9 years.	14.....15 years.
1.....4 "	30.....10 "	5.....16 "
5.....5 "	5.....11 "	1.....17 "
16.....6 "	23.....12 "	7.....18 "
20.....7 "	3.....13 "	1.....19 "
37.....8 "	6.....14 "	3.....20 "
Aged 15.		

Distribution of the sexes :

Gelding.....	164
Mare.....	50
Stallion.....	2
Mule.....	12
Pony.....	1
.....	1
Total.....	231

Diseases requiring operation :

Navicular arthritis	{ One foot.....	163
	{ Both feet.....	31
Ringbone.....		25
Sidebone.....		5
Fractured navicular bone.....		1
" second phalanx.....		1
Punctured sole.....		1
Enlarged flexor tendons		1
Laminitis (acute)		1
" (chronic).....		2
Total		231

Period of soundness or service, and termination of the 89 high operations. Most of them, even some of the oldest, are so at the present time :

Navicular arthritis, 68 cases :

1.....10 years.	1.....9 months.
1.....7 "	1.....8 "
3.....5½ "	2.....6 "
5.....5 "	1.....4 "
3.....4 "	1.....3 "
1.....3½ "	2.....2 "
3.....3 "	
14.....2 "	
4.....1½ "	
13.....1 "	

Ringbone :

I.....	5	years.
I.....	3	"
I.....	2½	"
2.....	2	"
3.....	I	" I then little lame.
I.....	6	months. " " "
I.....	3	" " " "
2.....	2	No improvement.

Sidebone.

I.....	Sound.
I.....	No relief.
Enlarged flexor tendons (below fetlock).	
I.....	2 years.
7.....	Did well.
Relieved I.....	2 years.
Acute laminitis, I.....	Suppuration.
Chronic laminitis at 4 months.....	Sound.

Return of lameness :

I.....	2	years.
2.....	I½	"
2.....	I	"
I.....	9	months.
I.....	6	"
I.....	3	"

These two cases, reported by Dr. Oyler, of Harrisburg, are not mentioned in the table.

Neuromas :

2.....	2	years.
I.....	6	months.

Degeneration of foot :

Breaking down of Tendons.	Suppuration of Foot.
I.....2 years.	I..... I year.
I..... I "	I..... 8 months.
I.....5 months.	2..... 3 "
2.....4 "	I..... I "
2 (Ringbone).....2 "	2..... I "
—	2.....
7	I..... 14 days.
	I Immediately.
	I " acute laminitis.
	—
	12 Total..... 19.

In the majority of cases the degeneration of the foot took place within the first year, and earlier than that of the tendons.

Sixty-eight Cases of Neurectomy (Plantar) :

48	Sound or serviceable from 1 to 10 years.
4	did well.
13	degeneration of foot.
2	return of lameness. { 1. 9 months.
	{ 1. 6 months (neuroma).
1	failure.

—
68

Of these 68 cases, 70 % were sound or serviceable for at least from one to ten years. The minimum is one year, but as many of them are still in this condition, the average time will be still greater than is indicated by this table.

In 20 % the foot degenerated; in 3 % the lameness returned from reunion of the nerves or neuroma.

Low (digital) operation. Navicular arthritis, 98 cases :

2.....	5 years.
5.....	4 "
9.....	3 "
2.....	2½ "
8.....	2 "
3.....	1½ "
15.....	1 "

—44

1.....	10 months.
1.....	8 "
2.....	6 "
2.....	5 "
1.....	4 "
2.....	3 "
1.....	1 "

—10

Serviceable (not included in the above).

2.....	No date.
1.....	4 years.
1.....	3½ "
2.....	3 "
4.....	2 "

—10

Much improved.....	15.	
Slightly.....	6.	
Unsatisfactory.....	12.	
Degeneration (48 hours).....		1
		—
Total.....	98	

Return of lameness :

1 year.....	3
8 months.....	1
5 “.....	2
3 “.....	2
4 “.....	1
2 “.....	1
10 “.....	1
	—
Total.....	12

The lameness returned within the first year.

In ringbone and sidebones (see table), digital (low) section does not usually effect a cure. The patient generally is relieved or improved, but some lameness or stiffness often remains.

Of a total 98 animals thus operated on, 55 % were sound or serviceable for a period, and even longer if we knew the termination given in the above table, 1 to 5 years. 15 % were much improved, making 70 % of the cases in which, if not practical soundness of locomotion, at least a decided improvement was obtained. I know of many such cases which have been passed by veterinarians as sound ; 12 % were unsatisfactory, and 1 % degeneration of foot.

I have operated on perhaps several hundred horses during the last seven years ; but, as many were hospital, and again, as in other cases, records were imperfect, so that the animal's subsequent history is not thoroughly known to date, I know of only 30 cases of my own of which I have personal knowledge to-day. They are classified below :

HIGH OPERATION.

1. Geld.	Navic.	Operat'n, Apr., 91.	Inside neuroma in two months. Then sound.	
2. "	"	" July, 1892,	Sound. Fast road horse.	3½ years.
3. "	" (double)	" Jan., 1891.	Sound.	2 years.
4. "	" "	" Oct., 1893.	Eight months. Then lame and feet degenerating.	3½ years.
5. "	" "	" Jan., 1891.	Not relieved. Near hoof suppurated in one month.	
6. "	" "	" May, 1890.	Sound for two years, then slightly sore, but serviceable.	4 years.
7. "	Ringbone (low)	" June, 1893.	Doing well, but has lost some speed.	1 year.
8. "	Navic.	" " "	Did well for one year. Was foundered and lost foot.	1 year.
9. "	" (Thoroughbred) double.	" Oct., 1892.	Won many races for one year. Lost sight of neuroma.	1 year.
10. Mare.	Navic. double.	" May, 1890.	Serviceably sound.	4 years.
11. Thoroughbred stall.	" "		Won races for one year. Lost sight of.	1 year.
12. Mule.	" "	" Dec., 1892.	Sold October, '93. Sound.	1 year.
13. "	" "	" " "	Foot sloughed, October, '93.	
14. Geld.	" "		Foot sloughed in five weeks.	

LOW OPERATION.

1. Mare.	Navic.	Operat'n, Jan., '89.	Sound to April, '92.	3 years.
"	"	" Oct., 1893.	Lame. Nerve high. Sound '94.	5 years.
2. Geld.	" double.	Op. Mar. '91, double	Degenerat'n of tendons May, '94.	2½ years.
3. "	" double.	Operation, July.	Doing well. December, '93.	
			Relieved two months. Neuromas.	
4. "	"	" "	Very lame. Destroyed following March. Tendons contracted and adherent to navicular bone.	2 months.
5. "	"	" July, 1891.	About two months. Neuroma. Little lame.	2 months.
6. "	" double.	" Jan., 1892.	Sound. Removed neuromas two years afterward.	3 years.
7. Mare.	" "	" May, 1893.	Doing well.	2½ years.
Geld.	"	" Nov., 1893.	Reoperated.	
8. Geld.	" "	" June, 1894.	Doing well and speedy.	2 years.
9. "	"	" Aug., 1893.	Doing well.	1 year.
		" Feb., 1890.	Sound.	
10. Mare.	"	" May, 1893.	Died from injury.	3 years.
11. Geld.	"	" June, 1891.	Serviceable. Slightly sore.	1 year.
12. "	"	" July, 1891.	Sound.	3 years.
13. "	"	" Sept., 1892.	Sound. Very speedy.	3 years.
14. "	"	" Mar., 1893.	Sound.	2 years.
15. "	"	" Nov., 1891.	In one month lame from neuroma. Sound for eighteen months.	1 month.
16. "	"	" May, 1890.	Still serviceable.	1½
			Sound. Died.	3 years.

Plantar operation :

2.....	4 years.
2.....	3½ "
1.....	2 "
1.....	1 "
4 (not traced).....	1 "
4 degeneration of foot within.....	1 "

In 71 % the operation may be said to have been successful. Two developed neuroma. No. 8 lost the foot, the result of laminitis one year after the operation ; degeneration of foot in 29 %.

Digital operation :

6 (at present)		3 years (two died).
2 "		2½ "
2 "		2 "
1 "		1½ "
2 "		1 "
3 (neuroma)		2 months.

81 % of these operations were satisfactory.

From the above records, what conclusions can be drawn ? Do they warrant us to recommend the operation to our client or shall we tell him, in the ordinary paraphrase, "sell your horse ?" The reply, in my opinion, should be the affirmative, always, however, keeping in mind the indications and contra-indications. My results have perhaps been a little more satisfactory than those of most others, due probably to the manner of selecting the cases. The surgeon practices very few operations of which 60 to 80 are satisfactory to him and to his client, and especially, with so little expense and time required until the animal is able to resume his work, and considering that without it the animal is generally worthless. Make allowance here for incorrect diagnosis and unskillfulness in operating, and the prognosis will be still morē favorable.

In choosing between the plantar and the digital operations, one must be guided entirely by the existing conditions, that is, the distribution of the nerves filaments to the diseased parts. The former removes the lameness more effectually, which is not so liable to recur ; but the possibility of interference with the gait and degeneration of the foot are greater. In the latter, I see absolutely no danger, excepting a more frequent recurrence of the lameness and at times incomplete removal of the pain. Whenever the local conditions warrant it, I recommend the low operation in preference to the high.

The after treatment simple. Suffice it to say that the bandages should be removed only every three or four days and the feet placed daily into a foot-bath containing corrosive sublimate or creoline. In this way I have often obtained union by first intention. The patient should be at rest for the first ten days and then have gentle exercise until the end of the third week in order to regain the normal use of the foot and to allow the blood-vessels to reassume their normal condition.

THE INFLUENCE OF CLIMATE AND OTHER ENVIRONMENTS ON THE DISTRIBUTION AND CHARACTER OF DISEASE.

BY PROF. W. L. WILLIAMS, V.S., Montana.

A paper read before the United States Veterinary Medical Association.

The influence of climate, housing, food, care, and other surroundings, induce marked changes upon the distribution and character of disease, whether among animals or mankind; and the student of pathology needs to weigh these forces carefully; that he may avoid error by arriving at conclusions based upon observations confined to a limited area.

Both in those diseases known to be transmissible, and in those supposed not to be capable of passing from one animal to another, we find in many instances that the disease is narrowly confined to a limited area and never seen outside of it. Others are usually confined to comparatively limited areas; passing rarely and spasmodically beyond their usual boundaries, soon to retreat therein again, others exist mainly in certain centers with isolated cases disseminated over a large portion of, or the entire animal world, while others know no boundary, apparently, except that of animal life; all presenting interesting variations in character, the reasons for some of which we can know or estimate.

The study of the various influences controlling the distribution and character of diseases belongs largely to the domain of philosophical medicine, and offers for consideration many highly interesting and instructive problems, but it is no less a part of

practical medicine giving new insight into many of those peculiar epizootics, as well as to a large number of extraordinary cases of common affections, which at times so baffle and worry the practitioner. The extraordinary case in one locality, under one class of conditions, frequently constitutes the ordinary disease under wholly different surroundings.

The study enlightens us as to the etiology of many diseases since we not infrequently find the prevalence of a disease in a certain locality attributed to certain well marked local environment; when, in fact, the same disease and of like character exists in regions where the supposed essential etiological factor of the former locality is wholly absent. So it is that we find our writers attributing a disease at times to some local cause, when a more general knowledge of the distribution of the disease would show them that it existed under conditions requiring some other explanation for its prevalence than that given.

Again, we find our writers describing symptoms of a disease as those characteristic of a malady, when in reality they are overlooking the essential characters and are portraying vividly what they have seen in a limited area, perhaps in the compass of a few square miles in a great city.

These omissions and errors find their way naturally into the class rooms of our veterinary colleges, and result in sending forth licentiates poorly equipped for such work as will fall to the lot of many in their chosen locations.

Neither the time nor the data at hand will permit an exhaustive consideration of the subject before us, and the sole justification for presenting it is the hope of awakening an interest in this very important and instructive study.

It was not deemed desirable to undertake the consideration of a great number of diseases, but rather of a few important affections which are more or less prevalent in the United States, which it is believed will serve as a ground work for an interesting discussion.

In order to secure as complete data as possible in the brief time at my disposal, letters were addressed to about one hun-

dred of the leading veterinarians of this country, almost all to members of this association, and representing, as nearly as possible, all sections of the United States, asking for their observations as to the influence of climate and other environments upon the distribution, character, course, and termination of the following diseases, viz.: Glanders, tuberculosis, actinomycosis, bursattee, enzootic spasm of the larynx, poll-evil and fistulous withers, osteo-porosis, rachitis, periodic, or specific ophthalmia.

The responses to these letters were unexpectedly numerous and were very gratifying in the amount of interest manifested, and the amount of valuable data contributed, and I wish to acknowledge here, with sincere gratitude, what I have not been able to do individually, my obligations to my colleagues for their kind assistance in the preparation of this paper.

It will be noted that some of the diseases very markedly limited by geographical lines have not been considered in our list, although their behaviour offers some very interesting points for study.

We are all very well aware of the closely defined area in which Texas fever is confined as an indigenous disease, its boundary being fixed fundamentally, to all appearance, by thermal conditions. The so-called loco disease of the dry regions of the West, seems to be co-existent with the prevalence of the loco weeds—the *oxytropis lamberti*, and closely allied plants, although up to the present the relationship between the plant and the disease has not been defined.

Other diseases of a local character such as “mountain fever” and “poke easy,” or “kidney disease,” prevalent in certain Rocky Mountain regions which have been but indifferently or not at all described, depend apparently upon local conditions, the nature of which are at present not even surmised.

Other diseases depend for their distribution and character upon the density of animal kind, like hog cholera and bovine pleuro-pneumonia, and tend to pass over infected countries in rhythmic waves, the lowest point of prevalence and mortality following closely the decrease in numbers of animals, and the

acquired immunity to a severe pestilence, to be again followed when the general conditions of the country are favorable to dissemination ; animal numbers have increased, and the disease in some focus has found favorable conditions for luxurious development, when the disease again spreads over a large area as a great epizootic.

The distribution and character of other diseases are largely determined by the prevailing use to which animals are put, thus infectious abortion of cows predominates in dairying regions and far less frequently in localities devoted to the breeding of beef cattle. Again other diseases may exist without prejudice to the native animal in a country where it is indigenous, and become a virulent pestilence once it oversteps its indigenous territory ; or susceptible animals are imported into its territory, like Texas fever and rinderpest.

Coming to the brief list of diseases we have selected to specially consider, first, in order of arrangement, is glanders, one of the longest known, most carefully studied and most widely disseminated diseases of animals ; running an indefinite, erratic course, assuming multitudinous forms, and offering on the whole, one of the most interesting subjects from the standpoint now viewed. Glanders among solipeds is more or less prevalent in every country so far as known save Australia, irrespective of temperature, humidity, altitude, or other climatic conditions. It attacks its victim in spite of food, housing, care, age, or breed, yet its prevalence, transmissability, character, and duration, are all as susceptible to the influence of such, as is the most delicate barometer to changes in atmospheric pressure, and becomes so changed in aspect that there is no resemblance in any way save bacteriologically between a series of cases.

Fleming (*) notes that the disease is highly prevalent in Continental Europe and northern and eastern China, rare in South Africa, unknown in India, except as an imported affection, and coming, as a rule, from Australia, where the existence of the disease is denied ! He also quotes Liguistin, as stating that the disease was unknown in Mexico until introduced by the

United States troops during the war with that country in 1847, but that it failed to spread to any notable extent.

Prof. W. Williams (†) states that glanders is a disease of temperate climates, diminishing in prevalence in hot or in cold countries.

Robertson (‡) agrees substantially with Williams, adding two exceptions to the general rarity of Glanders outside temperate climates by noting its prevalence in Norway and Java.

Freidberger and Fröhner (§) citing Krabbe, state that by statistics collected in 1857–1873, that for each 100,000 horses that were annually found glandered in Norway, 6; in Denmark, 8.5; in Great Britain, 14; in Sweden, 57; in Wurtemberg, 77; in Prussia, 78; in Servia, 95; in Belgium, 138; in France, 1130; and in Algiers, 1548.

In the State of Illinois from 1886–1892 inclusive, there were reported annually 13 glandered horses for each 100,000. Other figures of value in the United States were not available, and the prevalence of the disease can only be considered comparatively.

In the New England States, which are cool and not moist, the disease seems to be rare and to pursue a mild, chronic course generally. In Maine, according to the cattle commissioner's report, there were destroyed in 1891, 18 glandered animals, and in 1890 the same number. They claim, however, that a large percentage of the cases were traceable directly to importation from Boston, Mass.

Dr. Choate, Lewiston, Me., reports glanders of a mild chronic type fairly common in his vicinity. Dr. Peters, Boston, Mass., reports the disease rare. While Dr. Paige, Amherst, Mass., reports it rare except in large cities.

Judging from the report of the Massachusetts Cattle Commissioners for 1887, glanders in a very mild, chronic form was quite prevalent among the street-car horses of Boston.

* *Veterinary Sanitary Science and Police.*

† *Principles and Practice of Veterinary Medicine.*

‡ *Equine Medical.*

§ *Special Pathology and Therapeutics.*

In a special report by Dr. Winchester, it seems that 192 animals out of 1700 were quarantined as diseased or suspicious, out of which but four animals were killed, although Dr. Liautard had positively pronounced 31 glandered and 28 suspicious. Of the 192 animals quarantined, 20 were released by Dr. Winchester's protest, although this latter number included nearly all those positively condemned by Drs. Liautard and Huidekoper. It seems that acute, well defined cases, were almost unknown in this outbreak, and that the quarantining of the affected and suspected animals by Dr. Winchester, served evidently as Dr. Huidekoper notes in his report of inspection, to ameliorate the symptoms under the beneficent influence of rest, good food and improved hygienic conditions. There was a strong tendency, it seems, in these cases to spontaneous recovery, and it is well to note here that close quarantine, *i. e.*, the withdrawal from labor, with good food and care, always tends in all localities, to remission in symptoms and a tendency to recover, either apparent or real, almost always the former, thus tending to bring the official veterinarian into disrepute, and by bringing about many apparent recoveries tends strongly to domicile and perpetuate the malady.

In New York and Brooklyn, according to Dr. Berns, Brooklyn, the disease is comparatively rare at present, doubtless due more to the influence of well enforced sanitary police regulations than to climatic influences, the latter being quite favorable to the spread of glanders in a virulent form.

In Pennsylvania, Dr. Pearson, Philadelphia, reports the disease on the increase, but leaves us in the dark as to type assumed; it is reported comparatively rare in Ohio by Dr. Howe, Dayton, and its prevalence at a ration of 13 in 100,000 horses in Illinois has already been noted.

Climatically, New York, Pennsylvania, Ohio, Indiana, and Illinois, may be grouped together as comparatively humid states, with sudden and great thermal variations, but generally, neither excessively hot nor cold. The climate does not call for very warm stables, rendering the question of overcrowding and bad

ventilation a minor one, and being in a highly productive and prosperous agricultural region most horses are well fed and receive careful handling. The unfavorable climatic conditions are counterbalanced largely by favorable surroundings in other respects. In this series of states we find every possible type of glanders, the chronic prevailing, although the acute is not uncommon, due evidently to overcrowded, unsanitary stables. In country districts, quite notably in central Illinois, many cases exhibit a very mild type with very distinct tendency to spontaneous recovery.

Animals, which from their history have evidently been affected for six or eight years, have at no time been incapacitated in the least for ordinary work but have in every way except occasional cough and slight nasal discharge with slight tumefaction of sub-maxillary lymphatics and characteristic ulcerations, or cicatrices giving all evidence of robust health. Others have come under our observation, where an entire stable of horses had become affected alike apparently in an acute form, with emaciation and profuse nasal discharge, some of which entirely recovered; others partially recovered, and after two or three years were condemned and killed, while the recovered animals exhibited no signs of disease, although exposed to animals plainly affected. Acute cases, apparently approaching rapidly a fatal termination, frequently turn under favorable conditions and make very marked improvements.

The laws for killing prevent opportunities for very extended observations.

In New York, Dr. Law, Ithaca, observed to me in a private conversation, that he had seen at Ithaca permanent recovery from the disease.

Wisconsin, Michigan, and Minnesota, probably differ but little from the series of states just considered. Dr. J. S. Butler, Minneapolis, noted that in his experience, the disease is more prevalent and more acute in large cities, where horses are crowded in ill-ventilated stables. He also remarks that in his locality the disease apparently remains latent in winter and de-

velops in spring. This observation applies certainly to much of the territory considered, but not so evidently as Dr. Butler had observed since in the more southerly states just considered the entire winter may be and not infrequently is, almost throughout very like the spring of Minnesota. Hence often the winter season is the period for greatest development in these localities, while a dry summer with abundant food may operate favorably.

In Missouri, Kansas, and Arkansas horses, except in cities, are very little stabled, the climate being milder and no marked tendency to humidity, which condition seem to very markedly affect the type of glanders, the disease being quite thoroughly disseminated, but generally causing no great loss, spreading very slowly and attacking but few animals in a band. Dr. T. J. Turner, State Veterinarian, Columbia, Mo., observes that while widely disseminated the disease is but feebly communicable, and assumes almost constantly the mild type in outdoor animals and the acute type in those closely stabled. Dr. White, Sedalia, Mo., reports the disease almost constantly mild and very feeble transmissible. Dr. Dinwiddie, Fayetteville, Ark., reports glanders in mules as generally running a mild, chronic course, in direct contradiction to the generally accepted ideas of the disease in this animal in almost all parts of the world.

Dr. Mayo, Manhattan, Kans., notes that the nasal discharge in glanders is less in his region, he thinks owing to a dryer atmosphere, than observed in more northerly and eastern states.

Dr. G. A. Johnson, Sioux City, Ia., has observed the disease almost wholly in the chronic form, but notes no recoveries. Dr. W. B. Niles, Ames, Ia., has noted the disease in the mild form, and during dry seasons has noted apparent recoveries, leading him to believe that under favorable conditions spontaneous recovery is quite possible.

In the South Atlantic and eastern Gulf States we meet with a warmer and more humid climate, solipeds generally are of less

value, mules largely predominate, and as a rule they are not so well fed and cared for as in other sections considered.

Dr. Kilbourne, Washington, D. C., has found the disease quite prevalent in the District of Columbia, Maryland, and Virginia, usually in a mild chronic form.

Under rigid sanitary laws the disease has decreased in the District of Columbia from 78 cases in 1889 to one case every month or two. He has noted one case of spontaneous recovery from nasal glanders, two from Farcy, all proven cases of glanders and the recovery from one year after disease seemed in every way complete.

Dr. Cary, Auburn, Ala., comparing glanders in Alabama with his observations in Iowa and Illinois, finds the disease more virulent in the former state, owing to increased humidity with heat.

Dr. W. B. Niles, Ames, Ia., who has observed the disease in South Carolina and Iowa, finds that in mules it runs an acute course, while in horses he notes no difference in South Carolina and Iowa.

Dr. Tait Butler, Agricultural College, Mississippi, reports the disease rare in his state. Prof. A. W. Bitting, Florida, reports that in Florida isolated cases are rare and acute in form. The diseased animals, if not already in their ownership, are soon transferred to negroes.

Along the low, and more humid sections of the Pacific Coast glanders of a virulent type prevails quite extensively.

Aside from some very small areas, we have briefly glanced over the United States, except the Rocky Mountain region, and the high and to a great extent arid plains, sloping from their base towards the Mississippi River, a large part of which is cold, some of it extremely so, all quite dry, even to converting much of it without irrigation into a great desert, the altitude varying from 2,000 to 8,000 feet, and horses kept generally in large bands without stabling. They are usually placed in such environments as permit, with labor, the procuring of a liberal, if not an abundant supply of food.

Dr. A. H. Baker, Chicago, Ill., upon a trip to South Dakota in 1885, found glanders very prevalent, and was specially struck with the very mild type it assumed, horses doing their accustomed labor for seven or eight years without apparent detriment, and showing no constitutional defects whatever, yet by local lesions showing plainly and unmistakably that they were affected with glanders.

Dr. Hinebauch, Fargo, N. D., reports the disease as assuming the same form in his state, and to this mild, largely latent type, rendering detection difficult, he attributes its wide prevalence. Dr. S. Stewart, Kansas City, Kas., observing glanders along the Missouri river, Dakota to Arkansas, finds it in a very mild form and has noted several apparent recoveries, either spontaneous or under indifferent treatment. Dr. Waugh, Alleghany, Pa., observing glanders in California, Arizona, New Mexico, western Texas, and along the northern border of old Mexico, find it prevalent among horses, mules and asses, being most rare in the latter and assuming a very mild type. The acute form is rarely seen. This mildness Dr. Waugh attributes to the hot, dry climate, alkaline water and grasses richly impregnated with mineral substances. Treatment appeared favorable, yet he failed to produce recovery in cases tried in New Mexico.

In the San Joaquin Valley of California, Glanders has recently prevailed very largely and led Dr. Klench (*AMERICAN VETERINARY REVIEW*, Vol. XIII, p. 214) to contribute a very remarkable article upon the disease under the name of general lymphangitis, giving as faithful a description of glanders as can well be found in veterinary literature, in history, symptoms, termination, etc., yet holding, on the most palpably erroneous grounds, that the disease was not glanders. In this locality Dr. Waugh has noted spontaneous recovery in horses.

In Montana most horses are ranged on land 3,000 to 7,000 feet above sea level, have usually abundant food and a dry climate. The past year has been exceptionally wet, and as an immediate result, glanders has developed more commonly than before, and in a more severe form. Of forty cases inspected,

three were acute in character, two common work horses, indifferently cared for, and one a draft stallion kept stabled.

I had occasion to inspect some 2,000 range horses for glanders at the annual round-up, and while I found on the range twelve glandered animals, all but two of them had been worked on valley farms where glanders existed, and where they had either contracted or developed the disease. Of the two unbroken range animals found affected, one was a two-year-old gelding, the other an aged brood mare affected for five years. Both were in first-class general health, and showed slight, but evident local lesions. Most of the animals affected for the longer periods were of a very mild type. One recent case I have watched for a few months was severely affected, constitutionally and locally, in January this year, but has rapidly improved and is now apparently well, except small cicatrices in nostril and very slight glandular tumefaction.

The disease in Montana must be said to assume a remarkably mild type, and on the ranges is barely a contagious disease, and although farm animals badly affected are allowed at idle seasons to intermingle freely with range stock, yet the disease is rarely seen among them. Perhaps it is far more common among these range, or practically wild horses, than it would seem, but remains wholly latent, or in a mild internal form, until the animal is caught and subjected to the fatigue of rough breaking, when it develops. It seems highly probable that some range horses acquire the disease in a mild form, recover, and thereafter possess immunity. Post-mortem examinations of glandered horses in Montana show a less severe affection of the lungs, few glanderous tubercles being present.

In England the disease assumes, apparently, a more acute type than in most parts of the United States, and Prof. Williams (*Prin. and Prac. Vet. Med.*) holds that the only practical possibility of recovery is in mild cases of farcy. Fleming (*Vet. San. Science and Police*, Vol. I., page 505) admits the possibility of recovery in mild cases of farcy.

In Continental Europe it would seem it assumes a milder

type than in England. Leading professors, Dickerhoff,* Friedberger and Fröhner† and numerous others admit the possibility of occasional recovery, spontaneously, or by the aid of medication.

War has at all times and in all countries proven a prolific cause of glanders; the fatiguing work, the great exposure, frequently in a climate wholly new to the animal, the scanty and damaged food supply, the want of proper care, the intimate, immediate contact of healthy with diseased animals, in close barracks, or at times in still closer transport ships, and the large number of external wounds, galls and abrasions rendering superficial inoculation easy,—all serve to give the disease great virility, and cause it to spread as a serious scourge. This is not all, for, as Dr. Kilbourne observes regarding prevalence, it is traceable in many of the northern and border states directly to the purchase of affected horses from the United States Government at the close of the Civil War. The animals which had acute glanders, and would soon have died and ceased to have been a source of danger, were killed, while the dangerous animals, those with mild chronic glanders, being impaired for military service, were sold in every direction, causing a wide dissemination of the disease.

It has been claimed that breed influences the character and distribution of glanders, but this is probably indirectly. Some say that lymphatic draft horses suffer more severely, but in central Illinois, much devoted to breeding high class, heavy draft stock, the disease appeared far less in them than in other breeds. It appeared to be especially the disease of the poor man's horse. The better classes owned the more valuable draft stock, and if one were ailing the nature of the malady was learned by employing a veterinarian, and proper action taken, or the diseased animal was sold or bartered at a low figure to the poorer neighbor, and the disease, with the aid of unsanitary surroundings, communicated to his inferior animals.

* *Lehrbuch Path and Therap.*

† *Sp. Path. and Thera.*

To-day we find glanders most prevalent in those sections of our country where it runs the mildest course, shows the greatest tendency to recover, and is the least contagious. In such localities at present we find the most and the cheapest horses. The mild cases are difficult of diagnosis, and stock owners cannot be convinced of the character of the disease.

In the Rocky Mountain region the vast herds of wild horses cannot be satisfactorily inspected, and the mallein test in these is out of the question, so that the mildly diseased animals cannot be detected. Owners have been taught to believe that glanders is uniformly and rapidly fatal; hence, take no alarm from a feeble nasal discharge, which disappears at some seasons of the year, the animal continuing in good general health and performing good labor year after year. Many owners are, in their own mind, competent judges of the matter, and relate how much they saw of it during the war, but are not aware that they saw only acute cases and failed to note the mild ones which, taken from the army and sold, scattered the seed, the fruit of which we are still harvesting.

Veterinarians, too, with little experience are slow to call glanders, in many of these localities, by its right name; but, like Dr. Klench in the paper already noted, worry themselves to find some other name by which to hide their error as to its real nature. Our British and American colleges give too vivid a description of the virulence of glanders, and the average graduate locating in the dry regions of the west is illy prepared to condemn a horse for glanders that has been barely visibly affected for seven or eight years, or one that has been ailing for a few months and is rapidly recovering.

To control glanders, we need to appeal to intelligence where it exists, and in its absence to force. When an intelligent horseman has been working a fat, robust, glandered horse for seven or eight years, it does not appeal to his intelligence to say to him that his animal is affected with an unavoidably and rapidly fatal disease.

(To be Continued.)

HOW CAN WE CONTROL THE PREVALENCE OF TUBERCULOSIS AMONG CATTLE?

BY M. R. TRUMBOWER, D.V.S.

A paper read at a meeting of the United States Veterinary Medical Association, held in Philadelphia, Pa., September 18-20, 1894.

GENTLEMEN. — Addressing you as a representative of a great western state, one noted for its dairy and breeding interests, and in which no action has yet been taken concerning the control of this disease, I may appear as an obstructionist rather than an active sanitarian to those of you who have studied this subject longer than I have, and who have been engaged in practical work for its control.

The fatality among cattle from this disease is not so great as to create a general demand for legal measures to protect the breeders and dairymen against losses.

The demand is made as a public health measure.

In whatever I may say to you here to-day, I do not wish to be understood that I am opposed to destroying the tuberculous cattle, wherever they may be found, but I do believe that the danger to human life by eating the meat or drinking the milk from tuberculous cattle is very greatly exaggerated by many of our medical brethren.

In the consideration of this subject we must lay sentiment aside, attractive as it may seem, and study it so that we may arrive at conclusions that are practical and capable of being carried into effect without becoming abortive in our hands.

While I appreciate the need of active aggressive work I feel that we of the western states are far from being ready or able to enforce any specially restrictive measures at the present time. Our people are not educated in this matter. Some of our farm journals are publishing reports of the work done by a few of the eastern states with comments upon it that are very unfavorable, and instead of being an aid are detrimental to correct information.

Our dairymen are suspicious of imposition, and jealous of

their rights ; and, if we attempt at the present time to enforce active measures involving the business of the dairymen in the destruction of a part of their herds, before they become aware of the justice of such proceedings, we will succeed only in making a miserable failure, and endanger all practical efforts for the next generation.

Even most of our physicians and public health officials are not sufficiently well informed to endorse the actions that will be necessary to secure effective results.

In the medical profession this matter of sanitary protection against tuberculosis infection in its infancy ; by many of them the dangers are depicted in a horrifying manner, and by others they are almost entirely ignored.

Until the medical profession obtains some recognition in its endeavor to protect human life, what have we to hope for ? In their efforts human lives are at stake alone, regardless of financial values. In our efforts financial values are predominant in the minds of those directly and primarily affected.

Our dairy interests are very great. The dairy products of Illinois in 1892 amounted to the value of \$75,691,765 in 1893, \$90,000,000 in round numbers ; before we antagonize this great industry in any way that may seem arbitrary we should count the cost. Invested capital recognizes no sentiment, nor will it tolerate any apparent infringement upon its rights.

While this agitation regarding the prevalence of tuberculosis among cattle is a legitimate and proper one, we should be guarded in our assertions, and confine ourselves to statements of fact. Some there are who dwell upon the great danger resulting to the human family from the consumption of meat and milk—a danger that has been exaggerated out of all proportion—and if continued may result in the closing of all foreign markets against the beef and dairy products of this country, for it will lead foreign nations to believe that all our herds are largely tuberculous. We ought to be just toward ourselves, and avoid magnifying a fact that is sufficiently serious to be worthy of our attention when viewed in the light of truth.

Why lay so much blame upon milk from cows, by the wild presumption that many thousand infants die annually from intestinal tuberculosis, the result of milk infection, when it is acknowledged that at least seven per cent. of the human family is consumptive.

Does it appear right?

How many cases are recorded when cows milk was the known cause of such a fatality? Very few.

Does it not appear to you that we are attempting to make a scape-goat of the useful and almost innocent cow? Again, I say, we are not yet ready in the west to adopt radical measures for the suppression of a disease that does not prevail to any alarming extent among our herds.

I am well satisfied that we in Illinois do not have the percentage of tuberculous animals that you have in Massachusetts, or any other of the eastern states; our cattle are kept under different, better, and more natural conditions; their lives are more active, they are not so closely housed; there is far less exposure to contamination, and above all are not inbred as much as many dairy herds of the older states; the farmer does not keep the same family of cows on his farm for several successive generations, and then distribute them among his children as part of their birthright. The majority of our cows are used only one or two years in the dairy and then they are fattened for beef while yet young and desirable beef cattle; the most of our beef cattle are sold and slaughtered before they have gained maturity, hence we rarely find any evidence of tuberculosis among them.

Therefore I believe that we have a great deal less of this disease than is found in the older states.

If we undertake the eradication of tuberculosis from our breeding and dairy herds we assume an endless task. When we destroy one per cent. or forty per cent. of our dairy cattle they will have to be replaced by an equal number which in turn may be infected with tuberculosis. We will have to destroy or abandon many cattle barns such as cannot be thoroughly disin-

fectured. Consumptive attendants may be a source of infection of our herds. The presence of tuberculosis in swine and other domestic animals is a source of danger.

I see only one way by which we of the west can make any progress towards lessening the prevalence of this malady, and that is, to provide by special enactment laws for the inspection of all cattle that are used for supplying milk to cities, towns and villages. This would require inspectors for each district, who should be appointed by some central power, and no one should be allowed to sell milk coming from uncertified cattle. This action necessarily invokes a large appropriation for compensation of inspectors and other clerical aid. So long as any community is opposed to such enactment, its representatives in the legislative body will not vote for it. A rural representative will not misrepresent his constituency in such a measure.

Cities, by ordinances, may require milk inspection, but that does not reach far enough ; dairy inspection they cannot enforce, for most of the dairy herds are owned outside of their jurisdiction.

If the state provides for dairy inspection at public expense, all cities, towns, and villages are equally entitled to the benefits. Then, where will we find a sufficient number of competent, faithful, and honest men to fill this requirement. We do not have a sufficient number of veterinarians in the State of Illinois to do this work if all were engaged in it, nor is there a single state that has, with the exception of a few of the New England States.

I have an impression that we of the west can obtain the best results for the present time by using all our energies in disseminating reliable information, and thereby arouse a public sentiment that will eventually lead to the desired end. Patience, and persistent effort, judiciously administered, will do more good now than more active measures that would be in great danger of being regarded as arbitrary and unjustifiable by our people.

In the meantime, we in the State of Illinois, shall make inspections, as heretofore, of herds that are reported to be tuber-

culous by their owners, and earnestly advise the prohibition of the sale of milk from such herds until the affected animals have been killed.

By the terms of the law under which our State Board of Live Stock Commissioners act, they can only cause to be investigated reported existence of disease, hence a thorough search for diseased animals cannot be inaugurated except in tracing out exposures to any reported case.

Again, the peculiar wording of the law, regarding compensation to owners of diseased animals, is such that no compensation can be made in cases of tuberculosis, since in appraising cattle, the amount of appraisement is based upon the fair cash market value for use for beef or for dairy purposes. Such being the situation the only course left for the board to pursue upon the discovery of this disease, is to place the diseased animals under quarantine until the owner agrees to destroy them.

We dare not advocate radical measures just now, and I do not consider it so urgent and vital a necessity as some of our theorists do.

Now a word in regard to the tuberculin test. Are we justified in condemning as unfit for human food every carcass that has reacted to this test? If so, do we not destroy a great deal of valuable and productive property needlessly?

I do not believe that the milk or flesh is dangerously infected in an animal that has only a small deposit in a mediastinal gland, or an encysted abscess in the liver. But how can we determine this during the lifetime of the animal? We cannot do so, therefore we have to destroy all that react, or else only those which manifest some physical evidence of disease on examination. Would not the latter method be practically sufficient and exceedingly more satisfactory to the owner than the former?

Re-examinations would have to be made oftener, but we would avoid the antagonism and enmity of the owner, which would eventually lead to submission on his part to any measure we might subsequently advocate.

If it is advisable to destroy all cattle that react to the tuber-

culin test, the United States Government will have to take charge of this work in all the states that give their consent to it, and all cattle from other states must be strictly excluded, unless they have undergone the test, and are declared free from disease; this would virtually establish a dead line between states, and would soon become so irksome as to cause organized opposition and greatly delay, if not prove very detrimental to all concerned.

Before leaving this subject I wish to call your attention to a marked element of danger in the diagnosis of tuberculosis post-mortem.

Many of you doubtless know that aged cows which have been badly kept and whose vital powers are on the decline, very frequently have glandular indurations, caseation, and occasionally calcification may be present, without being tubercular in their nature. Again we occasionally find actinomycotic growths in the lungs and other organs which simulate in appearance tuberculosis so closely that it becomes very difficult to distinguish the difference. Possibly there are veterinarians who might inadvertantly swell the percentage of tuberculosis by mistaking such cases for that disease.

I will now leave this subject with you for your consideration, and if I have succeeded in provoking a discussion upon this difficult problem "How to Suppress Tuberculosis," I shall feel myself amply rewarded for presenting the practical part of this question in my own way.

THE DISPOSITION OF ACTINOMYCOTIC CATTLE IN THE UNION STOCK YARDS, CHICAGO, ILL.

BY M. R. TRUMBOWER, D.V.S.

A paper read at a meeting of the United States Veterinary Medical Association held in Philadelphia, Pa., September 18-20, 1894.

Since October 15, 1888, the State of Illinois has arrested and quarantined actinomycotic cattle at the Union Stock Yards, Chicago, and at the National Stock Yards at East St. Louis.

This work has been continued with varied success and under many obstacles to the present time. Agents of the State Board of Live Stock Commissioners have been placed in these yards, with instructions and authority to arrest all cattle that were plainly affected with this disease. All such animals were locked up in quarantine pens set aside within the yards for this purpose. On each Saturday the State Veterinarian examined all the cattle that had been quarantined during the week, and condemned as unfit for human food all that were badly diseased, and held for post-mortem examination (at the time of slaughter) all such as were doubtful of being fit to go on the market as healthy beef.

For the year ending October 31, 1889, 831 cattle were quarantined for examination, of which 773 were condemned as unfit for human food, and were tanked by the City Meat Inspector of Chicago.

For the year ending October 31, 1891, 2,259 were arrested of which 2,136 were condemned.

For the year ending October 31, 1892, 2,225 were examined and 1,759 of them condemned.

For the year ending October 31, 1893, 1,153 were examined and 1,006 condemned as unfit for human food.

During the years 1892, '93, and '94, professional "Lumpy-Jaw" buyers became so numerous as to make the work of arresting affected cattle very difficult, for they were favored by many of the Commission firms in their nefarious traffic, who reported to them all such cattle in their consignments and preferred to sell to them in preference to having them inspected by the State officials.

The contracts for the slaughter of these quarantined cattle were awarded by the Lump-jaw Committee of the Chicago Live Stock Exchange to parties at suspiciously high prices. This naturally created a suspicion that in order to realize any profit out of these contracts the meat was being smuggled into market after being dressed, in violation of the city ordinances, although the city meat inspectors had charge of the tanking of all condemned cattle.

It finally became a question as to who should be credited with defrauding the shipper and the consumer of meat, the lump-jaw buyers or the contracting butcher.

After trying in many ways to remember this evil, it eventually became necessary to enforce a radical change in the administration of this work or to wholly abandon it.

On the 3d day of January, 1894, His Excellency, Governor John P. Altgeld, the members of the Board of Live Stock Commissioners, and Dr. Arthur Reynolds, the Health Commissioner of Chicago, met the members of the Live Stock Exchange in their hall at the Union Stock Yards, and informed them that the Board of Live Stock Commissioners would positively withdraw from this work if the members of the Exchange did not lend their aid in reporting all the diseased cattle for examination that were consigned to them.

After many conferences and delays the following rules were adopted by the Live Stock Exchange :

RULE TWENTY-FOUR OF THE CHICAGO LIVE STOCK EXCHANGE.

SECTION 1.—No member or members of the Chicago Live Stock Exchange shall buy, sell, or dispose of, or weigh to any customer or purchaser thereof, or cause to be bought, sold, or disposed of or weighed to any purchaser thereof, any animal apparently affected with actinomycosis, commonly called "Lumpy-Jaw," or having any lump or swelling upon the head or neck, until the said animal has been inspected by the State Veterinarian, and such inspection shall be made prior to the time when such animal is weighed, or if not weighed, then before it is delivered. Only such animals as the said veterinarian shall pronounce to be free from the said disease shall be accepted and paid for by any members who may have purchased the same.

SEC. 2.—Members of this Exchange having possession or control of any animal or animals apparently affected with said disease or having any lump or swelling upon the head or neck, shall call upon the State Veterinarian at his office for inspection of such animal or animals, and if upon such inspection, such animal is found to be free from disease, the member or members having such possession or control, may proceed to deliver said animal in the regular course of business, and the said animal shall be accepted by any member purchasing or who may have purchased the same. If such animal shall not be so passed, or found free from disease, but either shall be condemned by said veterinarian or Assistant State Veterinarian, or shall upon inspection, alive or upon foot, be deemed doubtful by him, such animal shall not be bought, sold, or disposed of by any member of this Exchange, on foot or alive, or shall the carcass of such animal, nor any part thereof, be bought, sold, or disposed of in any way by any member of this Exchange unless, and until there has been a post-mortem examin-

ation thereof by said veterinarian and the said carcass has been by said veterinarian after such examination, deemed and declared to be healthy and fit for food.

SEC. 3.—Any member convicted of a violation of this rule shall be fined \$50.00 for each animal so bought, sold, or disposed of before inspection by him or his agents.

SEC. 4.—The Board of Directors are authorized to provide, arrange, and agree that this Exchange shall pay or provide the salary not to exceed \$—— per month of such person, to be selected by said Board of Directors, as the State Board of Live Stock Commissioners shall accept, to have charge of all animals affected with said disease, or apparently affected therewith, and of the quarantine thereof, pursuant to the statutes of Illinois, in such case made and provided; provided that such person shall make a report daily of the business of his station, and perform such other duties in the premises as may be from time required of him by said Board of Directors, not inconsistent with the statutes aforesaid.

SEC. 5.—The secretary of this Exchange shall keep a set of books showing the number and disposition of every animal inspected as aforesaid, and shall provide and account for the two sets of metal tags duly numbered and stamped to wit; of square tags stamped "condemned" for condemned cattle, and of round tags stamped "passed" for passed cattle, with a device for fastening same in the ears of all inspected cattle and likewise a number of blank paper receipts bearing the same number of tags, both of which he shall issue as may be required to the duly appointed State Veterinarian.

SEC. 6.—A private telephone system connecting all cattle scale-houses, quarantine pens, and the secretary's office, shall be established by this Exchange.

SEC. 7.—It shall be the duty of one member of the Board of Directors of this Exchange (who shall perform this duty in rotation) to be present at all times when any infected or diseased animal is slaughtered, to report to the secretary the results of such killing and personally to see that all portions of condemned animals except the hides go into the tank and are rendered unfit for food and that all portions of this system are rigidly adhered to.

SEC. 8.—The Board of Directors is hereby charged to take all necessary steps to make the provisions of this rule effective and the directors may appoint a committee of three members of the Exchange for that purpose.

The Board of Live Stock Commissioners then adopted rules as follows :

RULES PROVIDING FOR THE INSPECTION AND SLAUGHTER AT THE UNION STOCK YARDS, CHICAGO, OF ANIMALS AFFECTED WITH ACTINOMYCOSIS — ADOPTED BY THE STATE BOARD OF LIVE STOCK COMMISSIONERS.

RULE I.—The Board shall appoint as State Agent at the Union Stock Yards, Chicago, an Assistant State Veterinarian who shall act under the direction of the board or any member thereof. The board shall appoint such assistant agents as it shall deem proper, who shall hold themselves subject to the order of the agent above provided for.

RULE 2.—The board shall establish an office in the Exchange Building at the Union Stock Yards.

RULE 3.—There shall be established by the Chicago Live Stock Exchange in the Union Stock Yards a quarantine pen conveniently situated, to be known as the "State Quarantine Pen," in which shall be placed all animals failing to pass an ante-mortem inspection.

RULE 4.—Any person, firm or corporation doing business at the yards, who shall have any animal or animals apparently afflicted with actinomycosis, commonly called "lumpy-jaw," shall immediately notify the State Veterinarian or Assistant State Veterinarian.

RULE 5.—Upon receiving any notice, as provided for in Rule 4, it shall be the duty of the State Veterinarian or Assistant Veterinarian, to inspect such animal or animals as soon as possible.

RULE 6.—The State Agent shall place in the ear of each animal examined a tag indicating whether it has passed or has been held for post-mortem examination. A round tag for "passed" and a square tag for "condemned."

RULE 7.—The State Veterinarian, or Assistant Veterinarian, shall keep a record of all animals inspected, which record shall show 1st, Date of inspection; 2d, For whom the animal is inspected; 3d, The description of the animal; 4th, The number of the animal; 5th, Weight of animal; 6th, The result of the inspection, and he shall furnish to the Secretary of the Live Stock Exchange each day at the close of business, a copy of such record signed by him; and he shall also file at the end of each month with the secretary of this board a copy of the record for that month.

RULE 8.—It shall be the duty of the state agent and his assistants to place in the "State Quarantine Pen," each day, all animals held for post-mortem examination.

RULE 9.—When any animal is held for post-mortem examination, and the owner thereof, or his agent, refuses to accept for each animal the exact amount fixed by any contract made for the slaughter of condemned cattle by the Live Stock Exchange, then such animal shall be held in quarantine until the same shall be duly appraised, as provided for in Section 2 of "An Act to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals," approved June 27, 1885; in force July 1, 1887. This appraisal shall take into consideration the price obtainable for such an animal if condemned, and to be converted into material not used for human food. If such an appraised animal is passed by the duly authorized veterinarian after slaughter as fit for human food, then this appraisal shall be void and the carcass revert to the owner, who shall pay for the cost of slaughter.

RULE 10.—All animals held for post-mortem examination shall be slaughtered as often as this board shall deem proper and necessary at a special slaughter-house, to be provided for that purpose by the Chicago Live Stock Exchange. The slaughter of said animals and the disposal of their carcasses shall be held under the supervision of a committee of three, consisting of the State Veterinarian, or one of his assistants, to be designated by this board, an officer appointed by the Board of Health of the City of Chicago, and a member of the Board of Directors of the Chicago Live Stock Exchange. Such condemned carcasses shall be immediately tanked and rendered unfit

for food under the personal supervision of the committee above provided for. Said committee shall report to the State Veterinarian or Assistant Veterinarian, and also to the Secretary of the Live Stock Exchange, the result of the killing. All carcasses found after slaughter to be healthy shall be held subject to the order of the owner or his agent.

RULE II.—Nothing in the above rules shall be construed as abrogating the right as the State Board of Live Stock Commissioners or its agents to make such inspection of the yards as they may desire for the purpose of ascertaining whether all cattle afflicted with actinomycosis are duly reported to the veterinarian and subsequently rendered unfit for food.

The above rules were adopted by the State Board of Live Stock Commissioners at a meeting held in Chicago, July 16th, 1894, to go into effect July 23d, 1894.

(Signed)

C. D. BARTLETT,

C. W. PIATT,

J. H. PADDOCK,

Commissioners.

Attest.

A. M. BROWNLEE, *Secretary.*

I hereby certify that the above rules are a correct copy of the rules adopted by the State Board of Live Stock Commissioners at a meeting held by said board in Chicago, Ill., July 16, 1894, all members being present, and said rules were to go into effect on Monday, July 23, 1894.

A. M. BROWNLEE, *Secretary.*

Springfield, Ill., July 17, 1894.

The board ordered a daily examination by an Assistant State Veterinarian of all cattle arrested since October 1, 1893. They also placed an additional number of agents in the yard to hunt up the affected animals, but all was of no avail towards securing satisfactory results.

Since the newly adopted regulations have gone into effect, our work has been eminently satisfactory, and we trust that everything connected with this system will continue to grow in favor.

The new system went into effect on the 23d day of July, and we are able to show the following results for weeks ending

	Cattle passed in the yards.	Held for p. m. examination.	Passed P.M.	Condemned and tanked.
July 28— 89	“ 35	“ 12	“ 23	“
Aug. 4—122	“ 54	“ 15	“ 39	“
“ 11— 99	“ 58	“ 16	“ 42	“
“ 18—170	“ 89	“ 30	“ 59	“
“ 25— 76	“ 50	“ 15	“ 35	“
Sept. 1— 88	“ 52	“ 17	“ 35	“
Total, 644	338	105	233	

Twenty-four were condemned for being tuberculous — 2 steers, 20 cows, 2 bulls, and 2 were condemned as cancerous.

The receipts of cattle at the Union Stock Yards during this time were as follows :

For the week ending July 28th.....	50,714
“ “ Aug. 4th.....	69,959
“ “ “ 11th.....	61,753
“ “ “ 18th.....	64,893
“ “ “ 25th.....	68,948
“ “ “ 31st.....	65,123

By this we see that about one-quarter of one per cent. of the cattle received in the yards were in any degree affected.

Here in six weeks time the shippers got the benefit of 644 examinations of cattle that were very slightly affected ; they were, therefore, enabled to sell them at their full market value as healthy cattle. Under the old *regime* the lump-jaw buyers would have purchased at least four-fifths of them at one-half their market value.

To make the comparison clear between the old and the new system, I will present a report of the arrests from January 1st to July 23d.

Passed in yards.	Held for p. m. examinat'n.	Passed p. m. examinat'n.	Condemn'd.
731	794	229	565

We have a complete system for keeping the records of all animals examined in the yard, and I make a written report of the lesions found at the post-mortem examinations—the passed cattle, as well as those that I condemn. In condemning cattle I

act under the authority of the City Health Commissioner, having been appointed City Meat Inspector.

It has been questioned whether this board has the legal right to quarantine such cattle, if they are not considered dangerously inimical to the health of other cattle.

This is a question that would probably have to be decided by the courts, but so long as it can be carried out as a public health measure it surely ought not to be opposed by any right-minded citizen.

Chicago is the great cattle and beef market of the world. It is partly for the maintainance of the good reputation of this market of the west that this work has been inaugurated, while at the same time it gives protection to home as well as foreign consumers of our beef against the danger of contracting this formidable disease.

I believe that it is a great and a good work, and hope to see the time when all the states will enforce similar inspections at their large packing centers, abbatoirs, and stock yards.

THE EXTERNAL CONFORMATION OF THE HORSE.

BY PROF. E. A. A. GRANGE, V.S., Michigan.*

(Continued from page 499 and Concluded.)

As far as I am able to conceive from my knowledge of the anatomy of the hind leg this circular motion can only be produced, without increased expense to muscular force, by the peculiar shape of the bones entering into the formation of the true hock joint, the action of which, as pointed out by Prof. Williams, of Edinburgh, is like a screw, and in our opinion there is little doubt but that this screw-like motion is continued down to the foot under certain circumstances. This screw-like motion is again important during rapid movements in trotting, especially in the horse with much hock action, as it prevents him from

*A reprint from Bulletin 110, Experiment Station, State Agricultural College.

striking the lower surface of the body during extreme flexion of the joint, the foot being wound in an outward direction as it ascends from the ground. The circular motion of the foot is sometimes called *dishing*, possibly because it occasionally gives one the impression that the ground is being scooped out or *dished* by it. Some horses exhibit the dishing movement much more perceptibly than others do, which indicates that the screw-like motion in the hock joint of some horses is greater than it is in others; then, if we are to regard the screw form of leverage as being the most perfect because it is the strongest, why other things being equal, the horse that dishes most will be the best performer, it does not matter whether it be under saddle, in the road wagon or at the plough.

Many years ago a gentleman once said to me that in the part of the old country where he came from they often used the expression, "a good disher means a good jumper." Our experience with horses rather verifies the truth of this expression, not only that they are good jumpers but good performers in a general way.

The shank (Plate I, 17) is the part below the hock and above the fetlock; it corresponds to the canon of the front leg, proportionately speaking it is a little longer, flatter and measures more in circumference. In shape it should be flat and deep from before backwards, the skin lying close to the bone and tendon—hard, flat legs being the ones which are best able to stand the trying work of the day. Those round, soft legs we so often meet with frequently prove a source of continual annoyance on account of being affected with grease or some other similar disease.

The parts below the shank are so much like the same parts in the front leg that they do not require any special description except to repeat that the foot is usually smaller and more contracted, with the sole more concave and the frog a little less developed.

Color.—It has been said from time immemorial that "a good horse cannot be a bad color," but we beg to take exception to

this ancient adage, for we believe that a bad color often spoils a good horse from an artistic standpoint at all events, which at once becomes quite a point for consideration when we place an animal in the market for sale, though we do not intend to infer that we believe that the color affects the merits of the animal as far as performance is concerned, but rather that it is just as necessary to have a good color to complete the *tout ensemble* of a stylish carriage horse or a high class park saddle horse as it is to have a well formed head for instance.

It is often said that color has some significance in judging of the temperament of an animal, but our investigations in this line have not led us to believe that there is any reliance whatever to be placed in opinions formed upon such a theory. It is true that many chestnuts are high spirited, but the same may be said of any other color. Temperament is controlled, in our opinion, by something deeper seated than the skin, most likely the chief organ of the nervous system, the brain.

It is also contended that the color has much to do with the individual comfort of the animal when exposed to the influence of the sun's rays, more particularly in the summer season, but our observation has not demonstrated the truth of this supposition, for as far as our knowledge goes dark horses are able to do just as much work without showing fatigue on the farm or the road as lighter colored ones. This may perhaps be accounted for by the non-conducting properties of the coat, for the hair being a non-conductor, it probably makes little difference to the parts beneath what color it is as far as transmitting the influence of the sun's rays is concerned.

The power to resist heat or cold is, we believe, invested in the constitution of the animal.

It was generally conceded by those Greek and Roman equestrians who wrote before the Christian Era, that a good horse could not be judged by its color, although one of them goes so far as to say: "That a mane which is of the same color throughout and of fine hair is generally the best, and besides it is most unlike that of the ass and the mule." (See The Art of Horse-

manship, by Xenophon, translated by Morgan, page 108.) I cannot help thinking that the writer regarded the *mane* in the same light that we do the *coat* or hair covering the whole body, in which case it is evident that like many persons of to-day, his taste ran to solid colors, but he does not give any preference to shade. The primitive colors of the hair of the horse appear to be *white*, *red*, *black*, and *yellow*, all other shades or mixtures being simply modifications of one or more of them. If we infiltrate a few atoms of yellow into the white hair we get a cream, which is represented in the equine race by quite a variety of shades, according to the proportions of white and yellow.

If on the other hand we treat black and white in the same way, we get a dun color, which also has a variety of shades ; while red and yellow, with some white, seem to produce the various shades of chestnut or sorrel, and bay as well as brown are no doubt produced by a delicate mixture of the four primitive colors. In some animals only one color is apparent, while in others it seems to take all four to produce the exact shade. The amount of coloring matter supplied to each individual hair is arranged by nature in many different ways so as to produce very different results. For instance, we find rings of certain shades surrounding spaces of other shades producing a dappled appearance, which is often admired, as the dapple gray, dappled bay or dappled brown, etc., etc., though we do occasionally meet with horses where the dapple does not improve the appearance. In other individuals we find the different colored hairs arranged so as to produce numerous shades of gray caused in a somewhat interesting manner by the predominance of one color or another ; black and white producing iron gray ; red and white, roan gray, or yellow and white, Isabella gray ; the two latter with black hair produces roans of different shades, red roan or yellow roan, as the case may be. These, like all other shades, become light or dark according to circumstances.

We also meet with horses which are of two distinct colors, having sharp lines of demarkation between the one and the other. Indeed we have the different colored hairs arranged in

so many different ways, that it does not seem necessary to attempt to describe them all here ; while we occasionally have animals brought under our notice where the coat is of that peculiar tint that it becomes a matter of some difficulty to draw a line between one color and some other ; browns are sometimes so dark that it is hard to say whether they are black or brown, and similar instances come before us in other shades, the cream and the bay, the chestnut and the cream and so on.

In selecting horses for the market color plays an important *role* in the make up of the animal, so the use the creature is intended for should be given due consideration. If we want an animal for park saddle work solid colors take well, while in most instances badly marked pie-balds would not be looked at, although for the circus ring they might be most coveted ; again the dictates of fashion influence the demand and in some localities red roans will bring a higher price, all things being equal, than any other color. For farm work the darker colors generally look better and are less disagreeable in the warmer months of summer than white or other light colors. Extensive correspondence on the subject of color has demonstrated very clearly that much stronger prejudices exist amongst the patrons of the equine industry than is generally supposed, but happily the color does not, in our opinion, make any difference except for special purposes, this being the case we are all put at liberty to gratify our own tastes in selecting a particular hue.

Action and gait embrace those movements performed by the extremities during progression, and may be considered under three primary heads—the walk, trot, and gallop—with their various modifications, the running walk, the amble or pace, and the canter. These we regard as natural gaits since horses possess them through some natural predisposition or instinct. The artificial gaits or ornamental movements are those which are taught in the high school of horsemanship, and perhaps may be regarded as belonging more to the circus ring or tan bark of the riding school, than the ordinary commercial horse-world. They consist principally of the *passage*, a species of trot in

which the animal gathers itself into a rather showy attitude and progresses in a somewhat elastic manner, the *Spanish* walk, a most majestic movement in which the animal progresses in a remarkably precise manner, especially as far as its front legs are concerned; the *Spanish* trot bears a very strong resemblance to the walk, the majestic precise movements being very perceptible. There are many other high school movements which it is not necessary to mention here.

Although we have divided the gaits into two groups, it must be remembered that a natural gait in one horse may be entirely artificial in another; indeed we can hardly take up a live stock paper without reading of some converted trotter or pacer, as the case may be, while I have seen horses that did the Spanish walk or trot without an hour's training. Some horses cannot walk in the ordinary sense of the term, nor can others gallop, but so many are born possessing the first named gaits, that we feel justified in calling them natural, while the high school movements are obtained through training in nearly all instances.

In pursuing our investigations with regard to the gaits of the horse our chief aim has been to notice those movements which attract the attention of the rider or driver, and the more we inquire into this branch of our subject the more we are struck with the absolute necessity of selecting animals with the *correct way of going* if we desire to obtain the paying prices for our products when we offer them for sale. A gentleman from New York who has had a great deal of experience in the horse line in various capacities not only as an owner, but as a judge at the National horse show and other prominent exhibitions in the east, writes in reply to my inquiries that: "*A paragon of conformation and all the requisite virtues will bring \$175-\$300 here without action; one not half his equal in any particular, but with extra action will bring \$700-\$5,000. I have seen very poor individuals bring the latter price more than once.*" At the horse show of the Columbian Exposition I was much interested to observe the amount of stress exhibitors laid upon *action* in the draft classes as well as other breeds.

In pronouncing upon the action of a horse as being good or bad, due consideration must again be given to the use the animal is intended for, because what might be looked upon as good action for one class of work, would appear rather indifferent for some other ; take the saddle horse, and it is hard for the writer to conceive a more agreeable way of covering the ground than upon the back of a horse that has a nice long easy swing in the trot, going rather close to the ground, but with sufficient knee action to carry the toe well clear of all irregularities in the road bed, this with energy and moderate speed, goes a long way towards the make up of a good saddle horse ; but the same style in a coach horse would hardly pass muster if intended for fashionable city driving ; in addition to this (for saddle work) we must have the horse to canter nicely, with a long easy stride, free from that short bucking motion so often noticed in badly trained or inferior animals ; the walk should be energetic, fast and smooth, with plenty of elasticity to modify concussion. In some localities and with some persons the running walk is indispensable in the makeup of a first class saddle horse. The harness horse should be a good walker, a free, bold trotter with plenty of knee as well as hock action ; the former must not only be high, but it must be far reaching so as to carry the foot through a telling space at every stride and do away with that short choppy action sometimes described by an old saying "that such and such a nag will trot all day in a bushel basket," while the latter must bend the joint thoroughly, bringing the foot and curved pastern up from the ground in a sharp decisive manner, carrying them well forward and lowering them with energy and precision that reminds one of the movements of a clock, all jerky movements that indicate string halt being carefully avoided.

For slow draft work upon the farm road, or in the city, the walking gait is even of more importance than any other, so much so that some agricultural societies award prizes for the best walker, an innovation to be highly commended.

Having disposed of the external conformation of the horse

in a somewhat summary manner, let us turn for a moment to scales of points used in judging horses. In order to demonstrate the position we have taken with regard to them, we reproduce our advance bulletin upon the subject, but wish to say in addition, that from information gained from numerous contributors we think the most satisfactory way to arrive at a scale of points which could eventually be looked upon in the light of authority, would be through a National or International congress, made up of delegates from the different breeds and classes of horses, and let their decision as to what is required govern all *association show rings*.

The replies to the advance bulletin are to be counted by the hundreds, and, after reading them all carefully, the conclusion reached was that if it were possible to put them into a bag and shake them up thoroughly, the scale of points as we have arranged them would come out with so little change that one would hardly recognize it, although many writers took exception to the intrinsic value of all points on the body of a sound horse being equal (in this case a value of 5), some saying that the hock is of more importance than the head and consequently should have more points; but (leaving unsoundness out of the question), does not the head as often spoil a good horse as the hocks? Another says it is hardly fair to allow as much for the croup and dock as it is for the chest, but are there not as many horses injured from illy formed croups and crooked docks as from badly formed chests? And similar questions may be asked throughout the entire list.

It has also been suggested that one score card be arranged that will include all breeds and classes, the strong points of the different kinds of animals being emphasized in such a manner that they are not liable to be overlooked.

These and other questions are the ones which we think can only be settled by a congress of representative horsemen. We do not presume to offer anything more than the suggestion here.

Some horsemen are strongly opposed to judging horses by scales of points, and while there may be many good reasons why

men of extensive experience in such matters should be permitted to form their own opinions after the fashion of time-honored custom, yet there are cases where, even to the most experienced a standard of excellence would prove itself a very great convenience. The writer can call to mind a case of judging horses at an agricultural fair in a rural district, and in a draft class the horses were finally brought in line for inspection, but much to our dismay there was not what we would regard a draft horse in the lot, they were all under size and too light, but the first prize was, with much reluctance, eventually awarded to a handsome little pair of stout cobs, just such a pair as would look well before an ordinary express wagon, where moderately fast work was required, but entirely out of place in the draft truck, where the speed is seldom beyond the walking gait ; certainly they might have been thrown out altogether, but there was no authority for such a procedure, nor did previous custom in that locality warrant it. On another occasion a line of saddle horses was presented ; amongst them was a grand colt, with proper action and all the necessary requisites for a saddle horse, in fact as far as conformation and style went he was the only true type of a saddle horse in the lot, but he had one wall eye, a rat tail, and was of a most objectionable color, being pie bald on the hind quarters, mostly bay on the barrel and sides of the chest, and an indefinite roan on the neck and shoulders. He did not get the first prize ! although there were those there who thought he should have had it, and perhaps not without good reasons, but the variegated coat, the wall eye and the rat tail were so far from our ideas of a good saddle horse in the ordinary acceptance of the term that the prize went to another animal far inferior in point of merit. The propriety of these and similar decisions must remain open questions until the more salient features or essential factors in the makeup of a certain class of horse is defined by a recognized standard or scale of points. When this is produced the student can then form an intelligent opinion, within certain limits, as to what may be accepted or rejected in any named class, while those of more extended appearance will

have authority for supporting their opinions in cases where lines have to be drawn between one class and another, and breeders will be encouraged to breed more to type than they are at the present time.

We think that in judging horses by scales of points, each and every point should be valued according to its merits as compared with the same point in other animals which are in the ring and before the committee for award, and not by its supposed importance or relative value as compared with other points in the same animal in a standard which allows say 100 or 1,000 as the maximum of the aggregate of all the points. By the former method the judgment at once evolves into the question of *good*, *better*, *best*, at each point, easier, however, to express by figures, and it ensures thorough inspection of all the parts before they can be pronounced upon intelligently, a procedure in itself to be highly commended.

REPORTS OF CASES.

SEPTICÆMIA, RESULTING FROM A KICK.

BY O. FAUSNER, D.V.S., House Surgeon.

On July 27th, there was a large iron-gray gelding, seven years of age, admitted to the hospital, with the following brief history, animal was kicked on the near hind leg, at the lower third of the tibia, the entire leg was œdematous, and on close examination a small opening was found, this was probed, and the track extended to the bone; was also found that the periosteum was gone; a slight amount of pus began to flow when the probe was removed; owner said the horse was kicked about eleven days ago; a veterinary surgeon was called in, said it was a trifling wound, and the horse would be able to work in a few days; treatment was hot fermentations and apply ice packs to the head, this not being successful, the owner called at the hospital.

Animal was hardly able to stand, was put in a sling and

made as comfortable as possible, the track was very small and no pus could escape, above the opening slight pressure showed there was fluid, an incision was made with good results, quite some pus escaped, temperature 104, respiration and pulse very rapid, animal refused to eat; wound was injected antiseptically, also internal antiseptic were used.

Second day temperature reduced to 100 3-5°, respiration 52; eating a few carrots; seemed to be very nervous, raising the leg continually above the hock; an incision was made, quite some pus escaped, animal seemed to be in great pain, never resting on that leg.

Third day, temperature 105°, pulse 102, respiration 80, not eating, very anxious expression, another incision was made also with good results, temperature reduced to 103°.

Fourth day, temperature 100 4-5°, pulse was 98, respiration 48, eating a little gruel, but still very nervous, all the tracts was discharging freely and seemed to be doing nicely.

Morning of the fifth day was found dead in the sling, with a complete fracture of the tibia.

Post-mortem was held which certainly was interesting, the fracture was complete, in a oblique direction and incomplete in a vertical direction, reunion had partly taken place and very extensive periostitis the entire length of the fracture; about two inches above the fracture, the tissues were black from clotted blood, also a number of small pieces of bone were attached to the tissues, the lungs were the seat of multiple abscesses and congested, heart was normal and contained an antimortem and post-mortem clot.

SKETCHES FROM THE LAST MEETING OF THE U. S. V. M. A.

President, W. Hoskins, received a well deserved re-election at the last election of the new board of officers. His efforts as president did not, however, succeed as well as when he was secretary.

The fees of the members have been raised to fill the rather diminutive plethora of the treasury.

Dr. Williams, of Montana, was rewarded for his long journey and for his good paper by a re-election to one of the vice-presidencies.

The banquet was most attractive and went on very well, notwithstanding the early retirement of one familiar face who was to respond to his favorite toasts.

Visits at the veterinary department of the University, at Dr. Hoskins' private hospital and at the Zoological Garden, were among the most attractive closing exercises of the meeting.

Prof. Liautard, the Chairman of the Committee Minora, was much needed during the first days of the meeting. Conspicuous by his absence, he only arrived towards the last two days of the meeting.

Prof. J. L. Robertson, the well selected old treasurer, received marks of the great confidence the members had in his integrity; he was also re-elected to take care of the financial wealth of this association.

Prof. Salomon, the solid chief of the Bureau of Animal Industry, revealed himself as the defender of the two years school. His arguments were so powerful (?) at the meeting of the colleges, that no one dared to answer them.

The likenesses of several members of the association (Dr. Salomon, Hoskins, Williams, Robertson, Lyman, etc.,) which were illustrating the journals of Philadelphia, were scarcely *chefs d'œuvre* in an artistic point of view.

Prof. Lyman was most gratified by his appointment to the presidency of the Hybrid Association of the faculty of colleges—a mixture of two and three years school requirements. An association born of the United States, but now an independent body.

Prof. Schwarzkopf returned to Chicago not very well pleased or convinced with Dr. Salomon's defense of the two years' graduates, that this latter claimed was equal if not superior to the three years' students.

Prof. Hagar reported a most interesting case of cardiac abnormally which he first illustrated by well made photographic views, and later on by the natural dissection exhibited in his laboratory at the Veterinary Department of the University.

The reports of Prof. Pearson, Drs. Trumbower and John Faust, from the committee on tuberculosis, brought on a long discussion which was hastily closed by Dr. Miller, who moved to adjourn for the excursion prepared by the committee of arrangements.

If one can look back to the first year of the organization of this association, 1863, we believe, and glance at the last meeting in Philadelphia, he cannot help but salute and admire the good old face of Dr. I. Michener who, notwithstanding his seventy odd years, was there on the first bench among the listeners, and if unwilling to take part in the discussion, felt very proud of the advance that his profession has made and for which he worked so hard.

BIBLIOGRAPHY.

Bovine Prescriber. By James B. & Albert Gresswell. Bailliere, Tindall & Cox, London.

The authors of this little work are already well known to the profession at home as well as abroad, and their numerous writings are familiar to all of us. The *Prescriber* is an addition of much value to the literature of bovine pathology, which our practitioners will not fail to appreciate.

The Sheep; Management in Health and Diseases. By G. Armatage, M.R.C.V.S. Frederick Warne & Co., London and New York.

Works of any value relating to this valuable domestic animal are rather uncommon, and on that account anything which is to be presented to the ovine breeders and medical attendance is not to be overlooked. We certainly have enjoyed the recent work of Mr. Armatage, and can recommend it to our readers as one which, in its 200 pages, will present in the twenty-five chapters all the preliminaries necessary to the cares and management of sheep.

Traité de l'age des Animaux Domestiques. Treatise of the age of the domestic animals. By Prof. Chas. Cornevin & F. Lesbre, of the Veterinary School of Lyons. J. Bailliere & Fils, 18 Rue Hautefeuille, Paris.

Since 1824, when J. Girard published in book form his first treatise on the age of the horse, many books have been presented to veterinarians and breeders of animals in almost every language, and probably none has received more success than the part of the work of Goubaux & Barrier's "External Form of the Horse," which was so well translated by Prof. Harger, and published by a well-known house of Philadelphia, or that of Dr. Huidekoper, and yet in this last publication of Prof. Cornevin & Lesbre we find some facts which are missing in previous works, and elements of close observation. The work is divided into twelve chapters, and covers the wide field of the age of domestic animals, from the horse down to the fowl. Over 200 illustrations serve to present to the reader characters of ages which will help considerably in the practical application of the *theoretical* demonstration given in the entire work.

Traité d'Obstetrique Vétérinaire. Treatise of Veterinary Obstetrics. By F. St. Cyr & J. W. Violet. Asselin & Houzeau, Paris.

We have just received this most important work. We reserve the consideration of the entire book at the latter period,

but are at liberty to announce that arrangements have been made to present it to our American readers at an early date. It is the most complete work on the subject.

NOTICES OF BOOKS RECEIVED, JOURNALS AND EXCHANGES.

Syllabus on Human Embryology. An Introduction to the Study of Obstetrics and Gynæcology. For medical students and practitioners. With a glossary of embryological terms. By Walter Porter Manton, M.D., Professor of Clinical Gynæcology and Lecturer on Obstetrics in the Detroit College of Medicine; Fellow of the Royal Microscopical Society, of the British Zoölogical Society, American Microscopical Society, etc., etc. Illustrated with 70 outline drawings and photo-engravings. 12mo. cloth, 126 pp., interleaved for adding notes and other illustrations, \$1.25 net. Philadelphia: The F. A. Davis & Co., Publishers, 1915 and 1916 Cherry Street.

Journals.—Veterinary Record. Revue Vétérinaire. Annales de l'Institut Pasteur. Veterinarian. Veterinär. Recueil de Médecine Vétérinaire. Journal de Médecine Vétérinaire et de Zootechnie. Journal of Comparative Medicine and Veterinary Archives. Veterinary Magazine. Annales de Médecine Vétérinaire (Brussels). Progrès Vétérinaire. Clinica Veterinaria. l'Erconali. Giornale d' Medicina Veterinaria Pratica (Torino). Der Hufschmied. Gaceta de Medicina Veterinaria (Madrid). Therapeutic Review. Medical Record. New York Medical Journal. Revue für Thierheilkunde und Thierzuesch. Berliner Thierärztliche Wochenschrift. Journal of Comparative Pathology and Therapeutics. Buchhandlung für Medicin und Naturwissenschaften.

CORRESPONDENCE.

VETERINARY EDUCATION.

Editor AMERICAN VETERINARY REVIEW:

SIR.—It is certainly quite interesting for western veterinarians to read the article in your last issue from Olof. Schwarzkopf, dean of the newly-established McKillip Veterinary College in Chicago.

Is the doctor really in earnest when he states that "the bulk of graduates from the two-year-colleges are nothing more than rough-and-tumble practitioners," or is he trying to boom the (new-born) school of which he is dean.

It is a very easy matter to name all the past and present veterinarians at experiment stations in the western states, and the greater number of them are members of the United States Veterinary Medical Association, so the doctor must be careful or he may lay himself liable to expulsion from membership in the association, at least a similar statement made by the writer, regarding some men who had worked their way into the United States Veterinary Medical Association, which appeared in the REVIEW of November, 1891, was the cause of our application for membership being rejected by the Comitia Minora in 1893.

But when Dean Schwarzkopf declares that the bulk of graduates from the two-year-schools, which includes New York, Montreal, Toronto, and Chicago, are little above the old-time quack, it is time to call a halt.

It seems strange that the doctor has as his colleagues on the faculty of this anti-"diploma mill" (the McKillip College), men who have come out of those so-called "diploma mills."

Probably the dean would make the matter more clear if he would at once name the particular mills he referred to, and thus do justice not only to himself, but also to schools which have been a credit to the country.

The question naturally arises, is it possible that men taught in these two-year-schools ("diploma mills") are capable of turning out—or rather educating such high-class practitioners as pictured by Dean Schwarzkopf. Say dean, can water rise above its own level?

The writer has always been an admirer of Dr. Schwarzkopf, and we are sorry to see that he has made such a wholesale onslaught upon the "bulk of graduates from two-year-schools."

We are in entire harmony with the movement for a more strict matriculate examination, and a three years course of study, and hope to see it brought about with as little friction as possible.

The McKillip College, like every other veterinary and medical college, will turn out incompetent practitioners, and some of them may even become "bums," but it will be too bad if the dean or the McKillip College should be traduced for graduating such men. A man may be apt to learn, and may pass his examinations, while at the same time he may never be a good reliable practitioner.

While all progressive veterinarians desire a longer course of study by the various veterinary colleges in the United States and Canada. We also believe that there should be some special qualification for teachers in the different schools. It is not so much the two-year-term as the grade of teaching. You may matriculate a master of arts, but if he sits in a veterinary college for six years, being taught by incompetents, he will not graduate with as much knowledge of the art as he would do in a two-year-school, conducted by competent teachers. The attention of the profession should be directed to the grade of teachers, as well as to the length of course. How can the system of establishing colleges by a few individuals irrespective of their own qualifications be kept in check (?) Only by state or national legislation.

Wishing the dean of the new anti-"diploma mill" success in his new venture. And with best wishes for the success of higher education in veterinary colleges.

I am, yours truly,

D. A. CARMACK.

Brookings, S. D.

NOTES ON THE METHOD OF SPAYING BITCHES.

Editor AMERICAN VETERINARY REVIEW:—

DEAR SIR:—In a paper on the above subject, published in your journal last April, but which has only just fallen under my eye, the following appears: "Before proceeding, I must stop a

moment to heartily endorse Prof. Wesley Mills' remarks on the propriety and usefulness of the operation. The public, however, demand it, and so far as the writer is concerned, they shall have it." I presume the writer of the paper refers to my views as expressed in my work "The Dog in Health and in Disease," and as it might possibly be supposed from the quotation above cited that I did consider the operation proper and useful, I wish to leave no doubt about a matter in which I hold very decided opinions. I therefore crave space for the remarks on page 387 of my book: "It is impossible to predict what effect on the physical and psychic nature of the dog these operations may have. After ether the subject may be little more than a useless, animated mass of flesh, unworthy the name of 'dog.' The author would not allow any dog he owned to be thus operated on, nor could he be induced to perform it except when the parts are *diseased*; and he hopes the time is not far distant when every reputable veterinary surgeon will take the same view of the case, and absolutely refuse to thus run the risk of destroying the dog, as a dog, merely to gratify the whim of some owner who wishes to shirk his responsibility. Every man should either not keep a dog at all or treat the animal as a dog. A spayed or castrated dog cannot win a prize on the bench."

My views remain precisely the same as when the above was written. While I see much to admire in the method of performing the operation as described by Dr. Francis, especially the attention to antiseptic details and to anæsthesia, I could have wished that if the doctor really agrees with the views I have published he had shown as much moral courage as candor, and made his actions correspond with his convictions; for so far as I can see, it is only when the practitioner does so that he rises above the moral level of the quack.

WESLEY MILLS,

Faculty of Com. Med. and Vet. Science,

McGill University,

Montreal.

LEGISLATION IN OHIO.

Editor AMERICAN VETERINARY REVIEW:—

DEAR DOCTOR:—In the August number of the REVIEW (which arrived a little late), we noticed your editorial calling attention of veterinarians to a veterinary law passed by the Ohio Legislature at its last session; you especially calling attention to Sections 4 and 9.

My friend, Dr. Ball, must have sent you a pamphlet copy of the law, as it was at first printed; for let us assure you, Doctor, that the good points of this law which you call attention to, were completely eradicated from it previous to its final passage.

I have before me "Laws of Ohio 1894," and on page 391 is the law entitled, "An Act to Regulate the Practice of Veterinary Medicine and Surgery." Take the August number of the REVIEW, and with your pen make the following additions and corrections, and then read the bill, and your opinion will most likely be reversed:

SECTION 1.—Third line erase the word "exclusively." At end of third line change "five" to "three." Between the words "act" and "shall" in fourth line, add "in the State of Ohio."

SEC. 3.—Third line, change the word "ten" to "five." Erase the words "prior to the passage of this act."

SEC. 5.—First line between the words "meet and twice," add the words "at least."

SEC. 8.—Second line and fourth line change the word "ten" to "five."

SEC. 9.—Third line erase the words "three years."

SEC. 10.—Left hand of third line, after the word dollars, add the words "nor more than twenty-five dollars." Sixth line change the word "assistance" to "service."

You see, doctor, that Sec. 1 practically allows any person who has drenched a horse occasionally inside the last three years to be entitled to practice Sections 7 and 9; also practically allowing the board unlimited power as to rejections, even to diplomas, with no recourse to the candidate, only to try over again in a year at a cost of \$2.50 more. Yours,

WM. H. GRIBBLE, D.V.S.

VETERINARY LEGISLATION.

NORFOLK, Va., Sept. 29, 1894.

Editor AMERICAN VETERINARY REVIEW :

I have read with a great deal of pleasure your editorial urging the appointment of State Boards of Examiners. The more of the states that have them the sooner may we look for a National Board. You allude in your editorial to the act which you published as having been passed in Virginia. I am sorry to be obliged to correct the statement.

Evidently you have Maryland in mind. The only act that has ever been passed in this state that in any way recognizes the veterinary profession was passed last February. It was an Act incorporating the Virginia State Veterinary Medical Association.

The veterinary profession of this state had agreed upon such a bill as they desired. A petition was signed by almost all of the graduated veterinarians in the state, asking for the bill. But the empiric influences in the legislature were too much for us. A communication published in the June number of the REVIEW, states that the bill that has been introduced, was defeated by this association. That statement was false in every particular, and did certain gentlemen a great injustice. The bill first introduced by them was not fully satisfactory to some other veterinarians in the state. A compromise bill was then introduced, after having the support of nearly all the graduates in the state, and it was referred back to the committee. All this before this society was organized.

This association is now thoroughly organized, and we hope for great results. We believe that with earnest, concerted action, we can accomplish much valuable legislation at the next session of the legislature.

Virginia does *not* recognize the title of *veterinarian*, much less *protect the title*.

The next regular meeting of the association will be held at Charlottesville, on January 3, 1895.

GEO. C. FAVILLE, D.V.M.,
Secretary Virginia State Vet. Med. Association.

AN EASTERN VETERINARIAN'S ESTIMATE OF CALIFORNIA
QUACKERY.

(Paragraph from a private letter.)

This section of the country is rank with what is called the old-time horse doctor, otherwise known as the quack, each with his own specific for lung fever, etc.; and, though they have lost a great many cases, it is strange the amount of confidence the public still retain in them. I met one the other day who did not believe in the administration of internal medicines, but is accustomed to slapping on a blister, with the remark that he has had twenty-four years' experience in the business, and if this does not do he don't know what will. Yet the man has a yearly contract with an ice company manufacturing artificial ice, and they have twenty-six fine horses in the stable under his care, besides the rest of his practice in that section of the city.

Besides this man, I have met a fellow claiming to be a specialist on castration—claiming to be the best in the United States, and a more slovenly, dirty farm-hand it would be almost impossible to meet. The woods here are full of just these kind of men, and yet a board of examiners, consisting of graduated veterinarians, appointed by the state, allow these men to pass a bogus examination, and to go forth with a state certificate, fully licensed to practice veterinary surgery and medicine. They can talk of their societies, and the promotion of harmony in a profession, but where could there be harmony, or friendly discussion, where one-half the members would not understand what the other half were saying?

I merely write this to give you some idea of the situation of things in the far west, and also some of the men I have to contend with. I think this place is at least twenty-five years behind the age in this profession, and no doubt it will take some time before the public will be able to discriminate between the old horse doctor and the modern veterinary surgeon; still, time will tell.

AMERICAN VETERINARY REVIEW,

DECEMBER, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

COTENTINE COW.—During our vacation in August last, while abroad, our great desire was to make ourselves more familiar with the true character of the Norman breed of cows, upon which we published articles in previous numbers, with the idea that had suggested itself to us, that it might prove an advantageous subject to take the place of the condemned Jerseys of to-day.



We have visited Normandy and its rich pastures, we have seen numerous herds of true Norman (Cotentine) cows right in their birthplace; and how well then we were able to appreciate the beauties and the true characters of that great French breed!

At one of the fairs held at Isigny, so well renowned for the supreme quality of its butter, made from the milk of the true Cotentine cows, we saw some of the purest and handsomest animals that could be thought of, and the wood-cut, which we issue to-day, is obtained from a photograph of one of them.

STAMPING OUT TUBERCULOSIS.—When we were in Philadelphia, last September, during our short stay, we had an opportunity to ask at random of Dr. D. E. Salmon if the Bureau was soon going to begin the work of stamping tuberculosis out of the country. He answered by a smile—that smile of his which we all know well—and tells so much when the Doctor wishes to tell so little—and we were free to think that the Bureau was not quite ready to enter into that enormous undertaking. If we are well informed, however, we were in error; and right or wrong, we understand that the subject has been agitated in Washington.

But if this is a *canard*, played at our expense, what is a positive fact is that the work is going to be undertaken at an early date, if not already begun in Massachusetts.

Following a meeting of the Cattle Commissioners of that state, which was held lately at Springfield, measures are going to be taken in earnest, at once, \$50,000 having been appropriated,—inspection, quarantine, tuberculin test, slaughter, compensation to the owners, etc., etc.,—all are already prepared, and a series of regulations regarding the subject, and which we present to our readers in this number, will be issued.

When one looks back at the time when Massachusetts undertook the task of stamping out pleuro-pneumonia, considers the thorough manner in which the work was carried out, and remembers that since that time the State has been free from that lung plague, it must certainly not be surprising to see that great

Commonwealth enter and be among the first in the field, and we hope for as good a success as the peculiarity of the disease and its similarity to that of the human race will allow.

For the veterinarians of Massachusetts the action of the Cattle Commissioners will prove a boon which will serve to elevate them in the public estimation as sanitarians, besides the benefits that they must necessarily receive for the services that the Commissioners will be obliged to ask from them.

A similar work was undertaken some time ago by the State of Maine, and our friend, State Veterinarian George Bailey, was then severely criticised for his action towards Massachusetts; but he must feel amply satisfied to-day for the gratification given to his actions by the decision of the Springfield meeting.

There is no doubt that the work in Massachusetts will be anxiously watched, not only by every State in the Union where tuberculosis exists, but also in those parts of Europe where the disease is so commonly observed.

A WELCOME NOTICE.—We have received the title of the translation of Friedberger and Fröhner's work on *The Pathology and Therapeutics of Domestic Animals*, by Prof. W. L. Zuill, M.D., D.V.S., which states that the first volume will be ready about November 30th, and the second about January, 1895; and it is with pleasure that we make this announcement to our readers. It is with anxiety that we will await the time when the book will be issued, with our best wishes for the success of the work.

For many of us, probably, the work is known only by name, as, unless one can read German or French, it must have been brought to our notice only through the reputations of the German authors, or by the remarks that we made when reviewing the French translation.

This last we might say is a revised edition from the German, containing, as it does, valuable additions from the French translators and critics, from one of the best veterinarians of France—Prof. Trasbot, the present director of the Alfort School.

Prof. Zuill has, therefore, in translating the French edition, with the notes which were added to it, done a good thing towards advancing veterinary education in this country. Up to date, Williams' *Practice of Veterinary Medicine* has been the standard work of many of our veterinarians, and of our American schools. The work of Prof. Zuill enters the arena for professional usefulness, and we feel that he will have no regret for having done it, as we are confident that the work will meet with the same reception that it did in Germany and in France. We will all welcome the work of Prof. Zuill and derive, we are sure, much profit and pleasure in reading it.

MALLEINE.—ITS USES.—In several of the preceding numbers of the REVIEW, we have presented to our readers articles concerning the use of malleine in the diagnosis of glanders, in which we have endeavored to call the attention of veterinarians to the value of the Russian discovery, and it was with great interest that we read the long article of Prof. Harger in one of the last numbers of the *Veterinary Magazine*, relating a series of experiments which he had carried on, and of observations he had gathered at the clinics of the Veterinary Department of the University of Pennsylvania. If with these we recall the first article of Prof. Kilborne, presented to the Chicago meeting of the United States Veterinary Medical Association, it was justifiable to expect that American veterinarians would be eager to bring malleine into practice, and ask of it the results that it has given to others. And yet, if we are to judge by what is recorded in our journals, it seems that our efforts have been made in vain.

In our next number we intend to publish two more articles on the subject, one from the pen of Prof. Nocard, and one from a paper presented to the congress held lately in Buda Pest. These, we hope, will bring our colleagues to their senses, and will convince them that in malleine they have a powerful detective, which, we believe, does not fail in its application, and which they can no longer ignore.

The facility with which malleine can be obtained at Wash-

ington, from private laboratories, or from the Bacteriological Department of the Pasteur Institute in New York, whose advertisement can be seen in the REVIEW, is such that no one is justifiable in trusting any longer to the old modes of detection, even almost to the inoculation of other animals, in the inquiry as to the true existence of glanders in a doubtful or suspicious case.

ORIGINAL ARTICLES.

NOTES ON SO-CALLED SLOW FEVER.

BY HERBERT S. ADAMS, V.S., Centreville, Md.

Malarial Fever, or Miasmatic Poisoning.—This is a disease I have learned very little about except by actual observation, since my residence here, on Easternshore, Maryland. The only article I have seen in print on this subject is the third report of the State Live Stock Sanitary Board of Maryland, December 1st, 1891, by Dr. Robert Ward. I will try and give the history of causation of the disease and the conditions most favorable to it. I find that wherever it crops out there are two or more cases. I have seen it in horses, mules, and cattle, but very rarely in the latter; mules are not as subject to it as horses, and young animals more than old. Persons who keep fat and well nourished animals seldom, if ever, have the disease. Farmers who keep their stock in poor condition are the ones who have this trouble, if the conditions are favorable to it. They are as follows: I find it is contracted in late summer and autumn months, when the pasture is scarce and water very low or stagnant. It makes its appearance the following spring and early summer months, more especially in the spring when the animals are put to work in a poor condition and are shedding their coats. I think eating grass out of drain ditches or bogs, for that is the last grass that is eaten in a scant pasture. In the early spring these drain ditches, etc., are all full of water, and the grass growing in them is covered to a great extent by water and when dry weather comes on it is dried up leaving the grasses covered

with a coat of miasm, which in some cases can be seen by the naked eye. I have seen this disease caused by hay cut off a bog and very low ground; this kind of grass was a mixed variety of all sorts, although the hay was cured well and *not* soaked by rain during; when shaken up was very dusty and had a very unpleasant smell. There were two horses that were kept up and fed this hay with corn fodder. They had not been at pasture for a year or so; their drinking water came from a well some distance from a stable on high ground and was pure. So I attributed the cause of the disease in these horses to the hay on which they were fed. One lived three weeks and the other five after having been taken sick. Some cases attribute their trouble to stagnant and impure water, ditch and bog pastures, or both. In several instances where it was caused by stagnant ditch water alone, there were cerebro-spinal meningial symptoms in mild form exhibited, and after they had subsided malarial fever symptoms were very plain. Their drinking place was a ditch of surface water in which grew grasses of all kinds and which had a very bad smell. Three horses and several cattle were the victims of this plague. I did not see these cases until several were dead and others past recovery.

Symptoms.—First stage, acute, is noticed by great weakness if the animal is at work, and very soon gives out standing with legs spread out to keep from falling, breathing very heavily, with a look of extreme distress; after some little time, gets somewhat relieved and sweats in the flanks and behind the ears; then the symptoms begin to look more like pericarditis, chills with a good deal of severe pain, then a choking cough which the animal tries to suppress, high temperature, 104.1-5 to 107° F., with quick hard pulse 80 to 100 per minute; fever is three to five degrees lower in the morning than in the evening, and you can hear a grating sound by putting your ear to the side of the chest, characteristic of the disease, pericarditis. The next day you see, by standing near the side of the animal, pulsations of the jugular vein, caused by the effusion which partly fills the pericardium, and you can hear a faint splashing

sound. Then comes the second stage: this effusion of the pericardium does not become acute, but assumes a chronic form and remains in this state until hydropericardium and dropsy in general of the system carry off the animal by exhaustion. Sometimes they die in the first stage, but not often, and death is caused by the symptoms I have given. The second stage, and this is the period at which I am generally called, especially in the summer when the animals are at pasture. The owner informs me he has a case of slow fever he wants me to treat. The animal is very dull and weak, glass-eye, drags its feet as it walks, and the flesh seems to melt off its bones, and in three weeks it is a walking skeleton; they generally eat all kinds of food fairly well, but in small quantities. I have seen several eat ravenously, bowels act about natural, fæces covered with slime, food well digested, and no bad smell, and are the right color, urine high-colored and loaded with salts of urea, and in small quantity. Respiration a little quicker than natural, mucous membrane very pale and anæmic, regurgitation of blood in jugular vein very plainly seen, pulse 75 to 100 per minute, temperature 94° to 106° F., the extremities are warm and cold by turns, and are not swollen until approaching dissolution. I have seen animals drop dead while eating, and to appearances been doing and eating well, and in one case light work the day before he died. There is no tendency to biliousness in horses or cattle like human beings when suffering from malaria, and in no case can I remember any symptom of an excess of bile on the system in any animal. *Third and last stage*, which a speedy dissolution is to be expected at any time. First you notice a swelling of the legs, then sheath in the male, and mammary gland in the female often extending forward between the front legs, and then various complications set in and appetite fails, which hitherto has been fairly good. I have seen the same animal suffering from hydropericarditis, hydrothorax and septic poisoning at the same time, but the majority of animals die before they reach this stage. There seems to be a predisposition to pleurisy if exposed in any way. They generally stand until they die;

should they go down from exhaustion, they breathe very hard for an hour or so and die without a struggle. Post-mortem of those dying in first stage, my examinations were not very careful, having no one to assist me, and they were generally done in a hurry. On opening the body there is nothing very noticeable except there is a general engorgement of all the internal blood-vessels and symptoms of general inflammation throughout the viscera, but not at all localized except at the pericardium which has a swollen appearance and on cutting through it find the cavity full of serous fluid which is sometimes mixed with blood; the heart is the natural size but soft and flabby to the touch, lacking the firm hard feeling it has in health, and on opening it no valvular trouble can be seen; blood very dark and coagulated very firmly, I have only seen three die at this stage: most of them recover and die in the second stage. Post-mortem of second stage shows the following conditions, which are very hard to come at the cause of death, except the presence of hydropericardium, the whole of the viscera being apparently healthy. Bowels are filled with digested food, rectum contains fæces which were covered with mucus, stomach full of partly digested food, bladder was full of urine which contained a great deal of albumen and mucous. The pericardial sac contained nearly as much fluid as it could hold, condition like that of first stage, soft and flabby. Third and last stage. Very few reach this condition, which is a general complication of hydropericardium hydrothorax and septic poisoning, the animal presents a loathsome object, of which I have not made any post-mortem examinations, as those I had for subjects had been dead for some hours and were very impotent as it was hot weather. Treatment of first symptoms are as follows: Tincture digitalis and tincture aconite reduced in equal parts of each gave 30 M. every hour until pulse and temperature were reduced, and if pain continued, I gave chloralhydrate in $\frac{5}{8}$ ss. doses every hour and half until pain ceased; nit. potassium 3 i. in every gallon of drinking water until the kidneys were active; in twenty-four hours these symptoms subsided, and I treated as follows for sec-

ond stage: first gave the animal a good purge, aloes 3 viii. to 3 x. in a bolus followed up with

Quinine sulph.	gr.xl.
Ferri sulph.	gr.xx.
Nix. vomica pulv.	3 i.

M.

Sig. Given as one bolus three times a day.

Or

Quinine sulph.	gr.l.
Liq. paotas. arsenici.	5 ss.
Spt. fermenti.	5 iii.

M.

Sig. Given as one drench three times a day.

Quinine sulph.	gr.l.
Spt. fermenti	5 iii.

Sig. Given as one drench three times a day for a week.

I try any of these prescriptions and see which does the most good and keep it for a week or ten days and see which one is required.

Should like to hear about *Bottom* disease of Dakota and Missouri. I judge them to be a kind of malaria and should like to hear about them.

TUBERCULOSIS.

BY PROF. E. P. NILES, D.V.S.

A paper read before the Virginia State Veterinary Medical Association.

So much has been said and written on this subject that I fear any attempt on my part to give you anything new will result in an abortive effort. It seems to me, therefore, that the president of this association has made one of the greatest mistakes of his life in appointing me as an essayist on this particular subject. That the subject is, however, an important one all will admit, for there is probably no warm blooded animal that shows perfect immunity against this terrible disease.

That it is readily transmitted from one animal to another, and from the lower animals to man, hence a highly infectious disease, no one can authoritatively deny.

That it furnishes both the medical and veterinary profession with a serious problem to solve, is an accepted fact.

That it affords the state legislatures an opportunity to do *something* for the benefit of their constituents, is a fact yet to be impressed upon the minds of those honorable bodies, for without the proper legislation the veterinary and medical profession can do practically nothing toward stamping out the disease. We can advise, and continue to advise until Gabriel blows his trumpet; but it does no good with the majority of the masses unless we have the power to put our advice into practice.

That the aid of the state authorities is needed to check the ravages of this disease, I shall attempt to show later on in my paper.

No doubt you are all familiar with the history of tuberculosis, but to bring the subject more vividly before you in all of its phases I shall worry you for a few moments with the views of our ancestors, and in so doing endeavor to demonstrate to you that those who are now advocating the infectiousness of the disease and calling for public aid are not doing so without a firm foundation upon which to base their arguments. Tuberculosis has been known, although imperfectly understood since the days of Moses; for in the laws of Moses we find that the flesh of tuberculosis animals was discarded as unwholesome. In the ninth century European people made laws which forbade the use of tuberculous meat. These laws were continued, or made more rigid, as late as 1858. In 1702 the disease was coupled with syphilis, and, hence, named the French disease. About this time, or soon after, Germany made stringent laws, compelling the slaughter of all tuberculous animals. But in 1783 it was shown that the diseases had no connection with each other, and the strict regulations were at once relaxed. From the above it would appear that the former regulations were made solely through the fear that tuberculosis was of a syphilitic nature, and that when this was disproved all fear of the disease was banished. We cannot, however, help but believe that among the more learned class of people this was not the case, but among

the public in general this secondary idea had become so firmly impressed upon their minds that the rigid laws could no longer be enforced. Up to the year 1783 the contagious theory of tuberculosis had many advocates, yet the balance of opinion was on the opposite side. Even those who affirmed the contagiousness of the disease were in the dark as to its true cause. Some fault in the animal's hygiene was, as a rule, the attributed cause, the nature of which was not known. The first intimation that some irritating or infectious element was contained in the milk of cows suffering with the disease is due to Gerlach, late director of the Royal Veterinary Institute of Berlin.

Villemin, Klebs, Orth, Buhl, and others, demonstrated, during the period from 1857 to 1864, beyond a doubt that the elements from tubercular diseased organs contained some peculiar infectious material, and when inoculated into other animals experimentally was capable of producing the same disease. As a result of these experiments Villemin announced, in 1864, that tuberculosis was a specific disease, and due entirely to some specific cause from without the organism. The true cause of the disease, however, remained shrouded in darkness until Koch, in 1882, announced his discovery of the bacillus of tuberculosis. Since that time all of the experiments have served to strengthen Koch's statement that the *bacillus* is the sole cause of tuberculosis.

The manner in which the disease spreads from one animal to another, and from the lower animals to the human family, and *vice versa* is an interesting one and demands our serious consideration.

As all, or most, warm blooded animals are subject to the disease, the germ must necessarily have a large number of carriers. Before entering into a discussion of the manner in which the disease is spread it may be stated that the germ may enter the system of the healthy subject through the respiratory, digestive and sexual organs and skin. It may also enter the unborn foetus through the dam. It most frequently, however, enters the system through the digestive and respiratory organs.

When the infection is through the respiratory organs the subject must be brought in close contact or housed with others suffering from the disease. Not so with those that are infected through the digestive tract. For the germ may be carried for miles by other smaller animals. Since rats may be infected they may become carriers of the bacillus; feeding in the feed troughs and mangers as they do, one tuberculous rat may easily infect a whole herd of cattle by contaminating the food of these animals. Cats which have slept in the mangers of tuberculous animals have been known to contract the disease. They, too, may be common carriers of the bacillus, distributing them alike among the human family and the lower animals. It is also reasonable to suppose that the cat may contract the disease from the human subject, and from them communicate it to the lower animals. It was formerly supposed that dogs showed perfect immunity against the disease, but recent experiments have demonstrated that they are by no means uncommon subjects. They, therefore, may distribute the disease far and wide. The earth worm is also said to distribute the disease by bringing to the surface the germs from tuberculous animals which have been buried. Buzzards, though possibly not susceptible to the disease, may also distribute the germ in every direction from the carcasses of tuberculous animals which have been allowed to lie on the surface of the soil. Diseased cattle may infect the pastures, barn yards, springs, etc. These are all possible sources of contaminating the food and water consumed by the healthy individual, thereby indirectly affecting animals which, in some instances, may be miles away from the primary cause of infection.

Infection through the skin is rare, and usually takes place through an abraded surface.

Infection through the generative organs is also comparatively rare, and is the result of allowing healthy animals to be bred to those suffering from genital tuberculosis.

Infection of the unborn foetus through the dam may occur, but in such instances abortion is the rule; the foetus rarely ever being born alive with tuberculosis. An abortion in a hu-

man subject, whose sputum contained a large number of the bacilli of tuberculosis, was recently reported to the writer by a local physician.

That animals may contract the disease from tuberculous attendants is also a question worthy of consideration. The prevalence of tuberculosis in the lower animals is alarming, and if the statistics were carefully collected it would be seen that the disease is much more prevalent in the human family than is generally supposed by the public. In the human family the average ratio of deaths from tuberculosis to the total mortality is 14 per cent. while in some localities it runs as high as 33 to 50 per cent. Prof. Law, of the Cornell University says: "If the 5,490 deaths from tuberculosis which occur every year in the city of New York could be brought together in an epidemic lasting but one week, no small-pox, cholera or yellow-fever scare would approach the panic which would thus be created." Again: "If we take the whole civilized world and compare with the tuberculosis mortality, all the accumulated deaths from the war, famine, plague, cholera, yellow-fever and small-pox, we find that the latter are comparatively very insignificant." Yet comparatively nothing is done to stamp out, or check the ravages of this terrible disease. If in the lower animals, cattle especially, the disease was one that produced death in a short time the mortality in one year would be greater than that of all other diseases combined. Accurate statistics are wanting to give the accurate percentage of tuberculous animals in our herds, due to a lack of systematic professional inspection of all live animals, and those slaughtered for food. That the disease is more prevalent among the bovine than any of the other animals is probably due to the fact of their being more closely housed, more highly fed for dairy purposes and receiving less exercise. All domestic animals, however, take the disease readily enough when inoculated with it. In dairy cows and breeding cattle the disease is much more prevalent than in any other cattle, due to the fact that their vitality is lowered by high feeding, lack of proper exercise and being over crowded in poorly ventilated stables. It

is said that in some herds the per cent. of tuberculous cattle runs as high as 98, while in others no trace of the disease exists. These latter have been fortunate enough not to have had a tuberculous subject introduced in their midst. The following figures will give some idea of the ratio of infection in the different sexes. Although the statistics are probably somewhat inaccurate, it will be seen that cows head the list, oxen second, bulls third and yearlings and calves fourth. The fact that steers are usually allowed to run at large, which lessens the frequency of exposure, and that they are usually marketed at from two to four years of age, explains why they are less frequently affected than cows. Bulls, too, are usually kept by themselves and are, therefore, not so easily exposed. The disease being more prevalent in older animals accounts for the low per centage in yearlings and calves. Germany furnishes us with the following statistics from a number of its abattoirs as follows: Cows, 6.9 per cent.; oxen, 3.6 per cent.; bulls, 2.6 per cent.; calves and yearlings, 1 per cent. In Leipsic, tuberculous cows were 26 per cent.; oxen, 19.5 per cent.; bulls, 15.4 per cent. and calves, 9.3 per cent. Amsterdam shows a steady increase of the disease for the last six years as follows: In 1888 out of a total number of 28,016 animals slaughtered, 495, or 1.76 per cent., were tuberculous. In 1889, out of a total number of 26,225 animals slaughtered, 793, or 3.5 per cent. were tuberculous. In 1890, out of a total number of 22,813 animals slaughtered, 755, or 3.3 per cent. were tuberculous. In 1891, out of a total number of 23,392 animals slaughtered, 1,246, or 5.3 per cent., were tuberculous. In 1892, out of a total number of 25,454 animals slaughtered, 1,332, or 5.3 per cent. were tuberculous. In 1893, out of a total number of 28,342 animals slaughtered, 1,491, or 5.26 per cent., were tuberculous.

If accurate statistics could be gotten in this country no doubt they would be equally, if not more alarming, than the above.

The prevalence of tuberculosis in the human family has been mentioned above, and the question may be asked, why is the

mortality so great in the human family? For an answer one only needs to consider for a moment that, as a rule, there are no sanitary precautions taken by families who have tuberculosis in their midst; and unfortunately by many of their family physicians. Not long since, the writer was informed of a family of mountaineers who lived in a little log hut. A member of this family had tuberculosis, and expectorated on the walls, floor, and, in fact, wherever it was most convenient. The result is that there are two or three more patients in the same family.

If there was any doubt about the disease being contagious this one instance is ample proof of the affirmative. There is no doubt but what a large per cent. of the causes of tuberculosis in man are due to the use of flesh and milk of tuberculous animals. It may be safely stated that no less than fifty per cent. of the cases are developed from this source, which can only be avoided by means which I will suggest later.

The danger of using tuberculous meat and milk is twofold, viz.: that of contracting the disease, and that of aggravating the disease in those already affected.

It is a well known fact that the milk of tuberculous cows is much more dangerous than the meat, since the milk is usually consumed in the raw state. Meat, however, may contain the live germ, and even though the meat may be cooked done, the temperature may not have reached a point sufficiently high to destroy the germ in all parts of the meat. It was formerly supposed that salted meats were perfectly safe for consumption, but later experiments have shown that the germ may survive as long as thirty days. As the salt does not penetrate all parts of the meat alike, some of the germs may survive even longer. Our European friends recommend sending tuberculous cattle to the butcher if not in poor flesh. This practice cannot be too strongly condemned, for although the lesions may be local the germ may be in all parts of the body, since it is circulated by the blood and lymph. It may be stated in this connection that the germ is necessarily circulated in the system for some time before general tuberculosis takes place. The mere fact, then,

that the visible lesions are local is no indication that the flesh and milk of such animals are free from the germ. That the milk of tuberculous animals is exceedingly dangerous is demonstrated by the fact that a large majority of all the deaths of bottle-fed infants in the large cities are due to some form of tuberculosis.

(To be continued.)

TUBERCULOSIS.

BY J. FAUST, V.S., POUGHKEEPSIE, N. Y.

A paper read before the U. S. V. M. Association.

MR. PRESIDENT AND GENTLEMEN:—To me has been assigned the practical part of tuberculosis. When I think of writing something of value to the profession on this subject, I pause. From 1784 to 1886 no less than two hundred and fifty Europeans and a great many American veterinarians have furnished us literature on tuberculosis.

My great fear, gentlemen, will be that you will not find anything new in the following remarks, but my effort is to furnish my mite to the profession I so dearly love.

My first effort will be in the direction of the history of a few herd of my own knowledge.

Mr. A. Rogers, of Hyde Park, Dutchess County, had one of the finest selected herds of Jerseys, which to my knowledge had been healthy for years. Then Mr. Rogers bought at auction, in the city of New York, a lot of heifers which were bred and raised by Mr. P. Scobel, of Dutchess County; said heifers were tuberculous to my knowledge. One year after the purchase, I killed at different times twelve cows which proved to be tuberculous. One of the post-mortems was witnessed by Prof. Liautard, and the specimens examined microscopically and the bacilli tuberculosis found.

I made a series of experiments, first by inoculating a calf with the serum pressed out of a tuberculous lung. In sixty-eight days this calf was slaughtered at my hospital, and was

witnessed by the City Board of Health and Physicians. This calf proved to have general tuberculosis, From the calf I made a pure culture and injected a portion in Dr. Junghnns house cat, as he wished a daily observation of it. In eighty-six days this cat was destroyed and post-mortem made in the presence of the best physicians in our city. This cat proved to have general tuberculosis.

There was a new consignment of Dutch Belt cattle brought and placed with another herd. About one year after this twelve of them went to Massachusetts. On the eighteenth of August, 1894, the superintendent told me that every one of the twelve pined and died of tuberculosis.

The dry stock of J. Gilbert, of West Park, whose farm joins that of Mr. A. Rogers, broke through the fence and mingled with these diseased cattle for ten days. One year ago last May, the State Board of Health authorized me to make an investigation of said herd of forty heads. Of this number thirty were killed and twenty-nine proved to be tuberculous. This investigation took place three years after the mingling of cattle.

G. A. Boch, of Poughkeepsie, bought twelve herd of registered Guernsey cattle from Massachusetts. Three days after their arrival, I was called to examine one of those cows which was in the last stages of tuberculosis. I advised Mr. Boch to kill the remainder of that purchase, which was not done, and in about one month after that eleven head of Guernsey cattle were bought and he gradually increased his herd to eighty head.

Everything went along very fair the first year except many cases of mammitis, but after that he had to kill two or three at a time until he had killed seventy heads in eight years. Then Mr. Boch died and the remainder of the herd was sold at auction, as there was no law to prevent him. Mr. P. L. Van Wagon bought of this lot twenty-five heads and placed them in his herd, which numbered about forty head. These cattle were bought contrary to my advice. Sometime after the purchase Mr. Van Wagon was convinced of what I told him, and he slaughtered some and sold some, but kept two in his herd. One

year ago I investigated his herd with tuberculin, sixty-two heads, and found twenty-nine heads tuberculous.

Mr. Douglas Merritt, of Rhinebeck, Dutchess County, bought, fifteen years ago, one heifer of Mr. J. D. Wing, of Millbrook, Dutchess County. I examined said heifer and pronounced her tuberculous. She died one month after of tuberculosis. I never heard from Mr. Merritt's herd until last year, when I was called to test his cattle for the State Board of Health with tuberculin. I found seventeen diseased out of twenty-one heads. Post-mortem showed extensive tuberculosis in all cases.

F. Traver, D.V.S., of Rhinebeck, was kind enough to furnish me with the post-mortem results of an entire flock of sheep which proved to be tuberculous. These sheep were in the same field with the cattle. I have learned since the investigation that his hogs proved tuberculous also.

Soon after the investigation of Mr. Merritt's, I tested the herd of John D. Wing, of sixty-two heads, and found twenty-seven diseased, which were slaughtered in the presence of Prof. Law, who represented John D. Wing.

Mr. O. T. bought twenty-five heads of cows of John D. Wing, and nineteen out of twenty-five proved tuberculous besides affecting his own herd.

Hon. Levi P. Morton's herd of sixty-two cattle were tested with tuberculin and twenty proved to be tuberculous.

The statement of Mr. Cottrell, superintendent of the Morton place was, "I never bought a cow of Mr. S. Verplank, of Fishkill but what died of tuberculosis." I then went to Mr. Verplank's place and tested his herd of fifty-five heads and found twenty-seven diseased. H. Davison, D.V.S., of Millbrook, told me he never had tuberculosis in his herd until he bought cows from Mr. Ver Plank.

Mr. E. N. Howell, of Poughkeepsie, Dutchess County, imported in 1887, 1888 and 1890, twenty-six heads of Guernsey cattle, a very choice lot. One year following the importation some of the cows commenced coughing and became emaciated,

with the best of feed. Some of these cattle aborted and finally died. On post-mortem they showed tuberculosis.

Year after year this disease kept increasing in this herd and on the ninth day of November, 1893, I tested the remainder of this herd of forty-four head. There were nineteen destroyed, three awaiting slaughter and eight to be tested. On testing the eight heads all were found to be tuberculous.

But of the twenty-six heads imported they raised sixty-one which reached maturity. Of this total of eighty-seven heads, there are to-day only two living.

There were no cows, calves or bull brought to this place except the twenty-six head imported up to two years ago; he then had to buy new cows for the ones which had died or had been killed for tuberculosis. About five years ago I diagnosed tuberculosis in this herd; since then this so mortified him that he employed other veterinarians to examine his herd, but all agreed with me.

On September 4th, I killed and cremated the last five tuberculous cows on said premises. Mr. Howell claims that he imported this disease from Guernsey Island, to which the evidence all points.

Messrs. Sears and Howell, of Blooming Grove, Orange County, had a herd of seventy-nine heads Ayshire and grades. They bought five cows from a dealer and placed them with their cattle. In about six months they began to lose some cows. I made an investigation of this herd with tuberculin and found sixty-two diseased.

Mrs. Allen, of Pittsfield, Mass, owned a very fine selected herd of Jerseys of one hundred head. Of this number thirty-three were killed on physical diagnosis. I tested the remainder with tuberculin and found thirty-three diseased, total number sixty-six. The infection of this herd dates eight years back when they bought one bull and three cows. The bull died in about six months after purchase, very much emaciated, with bad cough. No post-mortem made.

Mr. D. Willigan, of Gardner, Ulster County, had a herd of twenty-four heads which I tested and found twenty-one diseased.

His infection came direct from his neighbor, whose herd pastured on adjoining fields. Said neighbor's cows were tuberculous and the local health officer reported this herd to the State Board of Health; he also killed and held post-mortem on several in the presence of a veterinary to confirm this belief, and proved they were tuberculous. But before the State Board of Health took action he sold them at auction.

L. Burchard, of Hamilton, Madison County, N. Y., President of the County, sold one cow which was slaughtered for beef, and after slaughter was found to be extensively tuberculous. This fact alarmed him and he made application to the State Board of Tubercular Commission. Dr. Henderson, of Syracuse, and myself were sent to make an investigation. We found a herd of forty-five cattle. Of this number twenty-three were diseased. This man bought two calves from a veterinary surgeon of Baltimore, and one of the calves was the cow sold for beef and proved tuberculous.

The Baltimore herd proved to be tuberculous, for this entire herd was sold and killed.

I think I have cited sufficient cases to demonstrate the contagion of one herd to another.

A few remarks in regard to economy on the part of the dairy-man.

With the present knowledge of this disease, with the aid of tuberculin, and a willing government, will we ever find tuberculosis so extensive as we have in the past?

For example, Cromwell, of Long Island, one hundred and ninety-three heads of diseased cattle.

George A. Bech, of Poughkeepsie, seventy heads of diseased cattle.

Douglas Merritt, of Rhinebeck, nineteen out of twenty-one cows, a flock of sheep and his hogs.

Hon. Levi P. Morton, of Rhinebeck, twenty head of cattle and four hundred chickens.

John Gilbert, of the town of Poughkeepsie, twenty-nine out of forty cattle.

John D. Wing, of Millbrook, twenty-seven diseased cattle.

Mrs. Allen, of Pittsfield, sixty-six out of one hundred heads.

P. L. Van Wagnen, of Poughkeepsie, twenty-nine out of sixty-two heads.

Sears and Howell, of Blooming Grove, Orange County, with sixty-two out of seventy-nine heads.

Mr. S. Ver Plank, of Fishkill, with twenty-seven out of fifty five head.

S. Burchard, of Hamilton, with twenty-three out of forty-five head.

D. Willigan, Gardner, Ulster County, with twenty-one out of twenty-four.

And numerous others, which time would not permit, could be cited.

Now, gentlemen, you can see by these few examples which I gave, and of which there are hundreds more, the extensive existence of this disease. I think it time our government should take strong measures to stamp it out from the standpoint of economy.

The following points will be of great value in the investigation of herds:

First, your highest natural temperature is from 5 P. M. to 9 P. M., and from 9 P. M. to 1 A. M. gradually decreases, and gradually increases again from 1 A. M. to 6 A. M., and then from 6 A. M. to 12 M. gradually decreases. The morning rise is not as great as the evening rise.

In hot weather while in pasture and in hot stables, also after exercise and feeding, the temperature is increased. Large quantities of water will reduce the temperature.

My plan in investigation has been to have the cattle placed in the stable at 5 P. M. initial temperature about 7 P. M. and inject tuberculin at 10 P. M., and then start to take the temperature at 6 A. M., 8 A. M., 10 A. M., 12 M., 2 P. M., and 4 P. M., and longer under circumstances.

The animals to be tested are to receive no food or water from 5 P. M. until 5 P. M. the next day.

One fact in taking the temperature: make all the cattle stand as all cattle defecate shortly after rising. This will probably save you many thermometers. The preparation of tuberculin is accomplished in the following way by me :—

181-2 drams of 1° solution of carbolic acid, using distilled water, and one bottle of Koch's tuberculinum which makes 20 drams of solution, I inject from twenty to sixty drops according to age and size of the animal. Injection to be made in centre of the shoulder. In cows you suspect of chronic tubercular mammitis, be sure and use the full dose, as they are hard cases to get reaction.

The question has arisen in regard to at what rise we shall consider a cow tuberculous. In the year 1892, we, as Inspectors of New York State, were instructed not to kill any cattle unless we had a rise of 21-2° or upwards, but I am frank to say that many cases of tuberculosis were left behind to which I have since been called to kill and hold post-mortem and found them tuberculous. I have found where there has been a steady rise of 1° or upwards, these cattle are very suspicious and generally are tuberculous. I should strongly advise to isolate them for a second investigation.

The total number of animals which I tested up to August 27, 1894, was eight hundred and sixteen heads, and out of this number three hundred and fifty-one have been killed and post-mortem records kept of same. Out of three hundred and fifty-one killed there were six which did not react, but were killed on the strength of a difference of opinion. In five of these cases there was pneumonia. The sixth one had a very marked dullness of one lung, a cough, and also emaciated. We found a piece of wire had penetrated the lung.

Out of three hundred and forty-five cattle which reacted, I have to record one failure, that of Mr. J. Gilbert's. The only thing found diseased in this cow was where wire and nails had penetrated the paunch. At this place there was a hardened bunch, which might have shown the tubercular bacilli if examined with the microscope. I have had a very narrow escape of

a mistake in two calves of John D. Wing's which had marked reaction, in which we found numerous small black tumors all through the messenteries. Prof. Law, who witnessed these post-mortems took these small tumors and inoculated rabbits, and on the 15th of June, 1894, at a meeting of the Tuberculous Commission, Prof. Law told me that these rabbits proved to be tuberculous.

I will speak on the sanitary condition of stables where I have tested cattle.

J. Gilbert, one stable, good; sunlight good. The other stable so bad that I advised him to abandon it.

Hon. Levi P. Morton, money and science could make no improvement.

E. N. Howell, sanitary conditions good.

J. D. Wings, sanitary conditions good.

S. Verplank, had two stables, one very good and the other very poor.

D. Willigan, stable in good condition.

Sears & Howell, one basement stable uncommonly poor, so much so that I advised them to never put any cattle there again. The other stable was above ground and in very good condition.

L. Burchard, stable very poor.

Mrs. Allen, stable very fine.

E. Clarkson, stable very poor and no diseased cattle.

George Cromwell, who suffered the heaviest loss, has a stable one story high, above ground and plenty of ventilation on all four sides.

M. Scofield, stable good.

I have mentioned these conditions as the question may arise to what extent the housing of cattle under poor sanitary conditions might play in the spread of tuberculosis. In a few of the herds which suffered badly, I found the focus in a basement under the stables. I have made it my special duty to advise farmers to better their stables for the housing of their cattle and especially the ventilation direct from the stables through the roof, and more sunlight.

I do believe, with the united effort of the profession, in the near future we will see a great improvement in this direction by explaining to the farmer the necessity of it from the point of economy.

The Disposition of Slaughtered Animals.—My plan has been where possible to cremate the animals. I first got a large quantity of brush and on this pile a large quantity of cord wood. I then make a run and draw the carcasses on top of the wood, piling them up. I then saturate the carcasses and wood with kerosene oil, one-half barrel of kerosene will be sufficient for from fifteen to twenty head, and will do the work very well.

Separation of Cattle.—In stamping out the disease, if we cannot get the aid of the government for compensation and the losses are too great for the owner to bear, then separate the well cattle from the diseased.

Disinfection is just as necessary as the destroying of the cattle.

The following is my rule of operation: First sweep, then wash with boiling water and soda, allow to dry, then use bichloride of mercury and wash with it. Make solution 1-500.

THE INFLUENCE OF CLIMATE AND OTHER ENVIRONMENTS ON THE DISTRIBUTION AND CHARACTER OF DISEASE.

BY PROF. W. L. WILLIAMS, V.S., Montana.

A paper read before the United States Veterinary Medical Association.

(Continued from page 551.)

I once treated a suspected animal for a few weeks, and then casually asked a competent officer to examine the horse, and he unhesitatingly pronounced the horse sound, and I concurred; but the horse had glanders, and we both eventually concurred upon that point; but the owner very properly called another veterinarian, because the history of the case and our opinions had not appealed strongly to his intelligence.

Again, I saw a pony with severe glanders pneumonia, which an experienced* veterinarian said would die in a few days; but

when we forcibly killed her some months later, she showed little constitutional signs of disease.

In another case, a veterinary officer condemned a horse severely affected, shot it in the head at close range with a shot-gun, saw it roll over and go into its death-struggle when, on account of a storm, he turned away. Later the owners helped the animal to his feet, fed him liberally, the hole in his head healed, and some time later, when the horse had apparently recovered, the veterinarian found it difficult to persuade the owner that his horse was affected with a surely fatal disease and must be killed.

I claim that it is not appealing to intelligence to urge the destruction of glandered horses upon the ground that it is either rapidly or surely fatal, because such assertions are evidently incorrect, and horse-owners can see it as well as veterinarians. Science is truth, and the prevailing notions of the course and terminations of glanders are not true, and veterinarians are largely responsible for it.

I have been surprised and gratified by the unanimity by which those I have asked to aid me in this paper, have, when any opinion at all is expressed, granted the possibility of recovery in cases of glanders.

In bovine pleura-pneumonia we find ample reasons for quarantine and slaughter, when only a small percentage of cases resulted fatally and the disease was not communicable to man. How much more may we urge slaughter when eventually nearly all cases prove fatal and at all times the danger of human infection confronts us?

Tuberculosis is, in many respects, allied closely to glanders and its distribution and character are modified by similar influences. In both diseases the course and duration is indefinite; the bacilli arranging themselves in groups in various tissues and organs, become encapsuled and eventually tend to perish therein. Both affect largely, both primarily and secondarily, the lungs, and both attack preferably the lungs of those individuals among susceptible species, other environments being equal, in

which these organs are not constantly very active but contain at some, if not at all times, a large amount of residual air. High altitudes with consequent dry atmosphere bring about special chest development and require for the sustenance of life a much more complete and active respiration, and permits much less residual air. Post-mortem examination of glandered horses at altitudes have thus far in my experience, indicated a much less development of pulmonary tubercles than attains in like cases at lower altitudes. Close stabling without exercise produces results quite parallel to low altitudes with humidity; hence, where the two are combined we would expect and do find the greatest prevalence and most virulent type of tuberculosis, while in the high altitudes with dry atmosphere it is unknown except as directly imported.

Dr. Waugh (Allegheny, Pa.) saw tuberculosis only in sojourning human invalids in California, New Mexico, Arizona and old Mexico. The same holds true in Montana and so far as I can learn throughout the Rocky Mountain region, although cattle abound everywhere but are rarely stabled. The only case of tuberculosis reported to me as having originated in the west was one by Dr. A. H. Baker in a Colorado bullock killed at Chicago stock yards.

As we approach the Mississippi River the disease becomes somewhat prevalent, so that Dr. W. B. Wiles, Ames, Ia., and Dr. G. A. Johnson, Sioux City, Ia., report the disease somewhat prevalent in that state, especially in stabled herds, and Dr. S. Stewart, Kansas City, Kan., reports whole herds of cows infected in western Nebraska and Kansas and eastern Colorado, chiefly in the udder without general lesions.

The infection in these cases he charged to diseased bulls brought from the east. Dr. Mayo, Manhattan, Kan., sees the disease only in highly-bred cattle, and in Arkansas Dr. Dinwiddie reports it practically unknown in highly-bred closely-housed herds which are rare, and in Mexico Dr. S. E. White, Sedalia, Mo., reports essentially the same conditions.

Dr. Lemay, Ft. Riley, Kansas, reports no tuberculosis.

Dr. J. S. Butler, Minneapolis, Minn., reports the disease rare in that state but observed it frequently in stabled dairy cattle in Ohio, while Dr. Howe, Dayton, O., reports it comparatively rare in Ohio, confined mainly to dairy cattle.

In the southern states cattle are, as a rule, poorly bred, rarely housed or overfed and not greatly used for dairying purposes, while generally considerable exercise is obligatory in order to obtain food, and large numbers are not brought in close contact with each other. Dr. L. Butler, Agricultural College, Mississippi, Prof. A. W. Bittino, Lake City, Fla., and Dr. Cary, Auburn, Ala., report the disease very rare in southern states.

As we approach the central Atlantic states, where many highly-bred cows are kept closely housed, highly-fed and induced to yield milk to their utmost capacity we find the disease enormously increased in frequency and virility. Drs. Clement, Baltimore, Md., Pearson, Philadelphia, Pa., Kilbourne, Washington, D. C., Paige, Amherst, Mass., and Peters, Boston, Mass., all report the disease as highly prevalent among cattle in their region, ascribing its great prevalence to high breeding, inbreeding, excessive lactation, excessive feeding, close housing with unsanitary conditions, etc. Dr. Peters estimates that in New England 1 @ 2% of cattle are tuberculous, while in eastern Massachusetts there is probably 3 @ 5% affected. Dr. Pearson notes it is increasing in Pennsylvania. Drs. Peters and Pearson note a tendency in some cases to recovery but regard this with the same suspicion that we all look upon apparent recovery from glanders—they constitute the greatest danger to the health of other animals.

Dr. Schwartzkopf, Chicago, Ill., offers some suggestions regarding tuberculosis which deserves more than a passing notice.

Foremost in the etiology of the disease he places confinement to hot stables during the summer and winter months, which assists infection. "You know," he says, "that dairymen found out that they got more milk by keeping their cows in doors. Experimental stations have been teaching this and this point has been overdone. Nothing reduces more the vitality of

the animal and the inherent resistance to diseases than lack of exercise. This is one of the reasons why we find so many fat cows tuberculous."

To these deductions I most heartily subscribe and have especially noted for a long time the pernicious teachings of some of our experimental stations founded by our government at a great expense for the purpose, among other things, of fostering our live stock and dairy interests which they are constantly tending to destroy, by destroying the vigor of our cattle.

They teach that a cow yielding 20 or 30 pounds of butter fat per week is exercised abundantly by secreting milk! These stations are founded for scientific experimentation but there is no science in such teaching.

We admit that in a short space of time more milk and butter fat can be taken from a cow with a given amount of food, but the process is contrary to all physiological and hygienic laws and constitutes an enormous drain upon invaluable reserve forces which we can never replace.

If we wish the greatest possible flow of water from a great storage reservoir, destroy the dam in a moment by some powerful explosive and the valleys below get all its contents in a few hours but the reservoir, which it required years of labor and perhaps millions of dollars to build is destroyed and the water accumulated during several months has been wasted.

The no exercise doctrine for dairy cows so warmly promulgated is less rapidly, but just as surely unwise and ruinous; but so long as men without physiological knowledge are paid high salaries to draw conclusions from such experiments, we may expect the evil work to go on, and tuberculosis to extend.

Actinomycosis is rarely seen in New England and the eastern states. Drs. Clement, Baltimore, Md., Peters, Boston, Mass., Paige, Amherst, Mass., Kilbourne, Washington, D. C., Pearson, Philadelphia, Pa., Choate, Lewiston, Me., Howe, Dayton, O., all report it practically unknown except by importation from the western states.

The disease is rarely met with in the southern states, Drs.

Dinwiddie, Arkansas, Jait Butler, Mississippi, Cary, Alabama, and Prof. Bitting, Florida, having observed the disease very infrequently.

The central Mississippi valley, the west and north-west appear to be the favorite regions for the development of this disease. I have seen it assume an epizootic form in Illinois during exceptionally dry seasons, attacking sometimes 30 and 40% of a herd of twenty or thirty animals. Drs. J. S. Butler, Minneapolis, Minn., T. J. Turner, Missouri, Lemay, Kansas, T. E. White, Missouri, G. A. Johnson, Iowa, S. Stewart, Kansas, W. B. Niles, Iowa, A. H. Baker, Nebraska, and Waugh, California, Arizona, New Mexico and old Mexico, all report it very common, and this seems the general condition all along the Rocky Mountains, and these semi-arid states sloping eastward from their base except, it seems, North Dakota, in which Dr. Hinebaugh reports it very rare. In all localities there appears to be a tendency, especially in the external lymphatic type, to spontaneous recovery through suppurative destruction of the affected glands and the iodide of potash treatment seems successful in a large percentage of cases.

It seems to be attributed by common consent, in most cases, to wounds caused by germ-infested hard, coarse food, but this seems to account for the means of infection and geographical distribution of the disease, rather than for the geographical distribution of the germ itself, a question which at present seems unanswerable. It seems that were the germs equally distributed sufficient coarse food would be encountered in eastern states to frequently produce the necessary wounds for infection.

Bursatte has been so largely described as a disease of British India and so scantily, and that only in periodic literature, that its presence is not generally looked for in this country, and far from all veterinarians have given the matter sufficient notice to recognize a case when seen, and it is feared that the reports so kindly sent me are not wholly reliable as to the geographical distribution of this malignant infectious disease.

R. W. Burk, and other East India writers, describe the dis-

ease as prevailing during the rainy season, and say it abates or temporarily recovers upon the cessation of the latter, or upon removal of animals to dry hills. It is scarcely noted elsewhere in the old world.

It is reported in the United States by Dr. Waugh in California, Arizona, New and old Mexico, by Dr. Hinebauch, frequently, in Dakota, by Dr. W. B. Niles in Iowa, by Dr. Stewart in Nebraska and Kansas, by Dr. Mayo in Kansas, by Dr. Y. A. Johnson in Iowa, by Dr. Lemay in Kansas, by Dr. J. S. Butler in Minnesota, by Prof. Bitting in Florida.

It prevails extensively throughout central Illinois. I have seen it in Indiana, and it is met with occasionally in Montana. It rarely assumes a fatal type in the United States, but is persistent. It recovers spontaneously, but, as a rule, upon the approach of cold weather, to reappear at the same part in worse form upon the return of hot weather. While heat and moisture seem to play an essential part in its prevalence and character in India, heat seems the essential factor here and determines its existence regardless of humidity, altitude, food, housing, care or other environments. The source of the infecting agent seems wholly unknown.

In not too severe cases it yields fairly well to treatment when consisting of the destruction of a large part of all the germ-containing tissues, followed by dessicating, antiseptic dressings.

The disease, I have for want of a better name termed enzootic spasm of the larynx, has been very rarely and indifferently described and seems from all reports to be rare in the United States.

Veterinarians Joseph Leather & Sons, describe an outbreak of this disease under the head of lathyrns-poisoning in the horse, and attribute the disease to the feeding of lathyrns sativa, or indian vetch. In this outbreak twenty-one out of thirty-five horses attacked were destroyed. In the same article reference is made to cases of the same lathyrns poisoning occurring in the practice of Dr. McCall.

Dr. Gresswell has seen much of the disease in Colorado, where the lathyrus sativa is not grown or fed.

George S. Witter describes the disease as it occurred in five of his breeding stallions in Colorado, but cannot suggest the cause.

Recently suit was brought in a Montana court to recover damages from the owner of an ore mill by a horse owner who had lost many horses from this affection, and alleged their death was due to poisons in mill tailings, which were scattered over his pastures in irrigating—quite a different cause from that suggested by Drs. Leather.

Dr. Choate thinks it occurs rarely in Maine although he has seen it personally.

Dr. W. B. Niles has not seen the affection in Iowa, but has heard of an enzootic in that state which is probably this disease.

I had the privilege of observing an outbreak of this disease in central Illinois, some years since, numerous isolated cases occurring the same year, but most of them happening on one farm, devoted to the rearing of full-blood and high-grade heavy French draft horses, three or four of which succumbed to the disease out of a band of about forty.

Over the entire central portion of the state a large part of the corn (maize) had been frozen before ripe, and wet weather following, the frozen ears rapidly underwent putrefaction, and being worthless were left ungathered in the fields, and livestock permitted to run in the fields after gathering the valuable corn, ate freely this frozen, putrefying maize; and it was only in animals allowed in such fields, or permitted to eat this damaged corn that I observed the disease. Even on the farm where I prevailed so extensively, only those running in the field were affected, while those kept in stable and fed on corn gathered in the same field, but carefully selected and not damaged, remained sound. Also four or five animals, which were markedly affected, and could run but a very short distance without severe laryngeal spasms, even causing the animal to fall, if urged on; recovered upon being removed from field and food changed.

I naturally referred my cases to the eating of the putrefying maize. They had no access to lathyrns sativa, vetches, pea-beans or other leguminous plants.

The etiology of this disease seems shrouded in the deepest mystery, and there is nothing positive as to any influence exerted by climate, season, altitude, housing, etc., but probably to some unknown element occurring accidentally but rarely, and locally, in food. My own cases and those of Drs. Leather and McCall suggest some form of mould, due in, my case, to frozen putrefying maize, in the London and Edinburgh outbreaks possibly to a mould multiplying on the vetches while somewhat damp on shipboard, but the Montana and Colorado cases tend to abrogate this idea and rather suggest a bacterial contamination of food not due to excessive moisture and not confined to grains, since some of these cases occurred on the range.

Fistulous Withers and Pole-Evil.—These two forms of the same disease show marked peculiarities in distribution. It occurs in every part of the United States, regardless of temperature, altitude, humidity, housing, food, breeding, or other environments, but it varies greatly in its prevalence and character in different localities, and the belief of veterinarians as to etiology changes with prevalence and location.

In the states east of the Mississippi River, the disease is reasonably frequent, but occurs as isolated cases, almost always traceable to trammation, exhibiting little or no tendency to spontaneous recovery, but yielding somewhat tardily to surgical treatment.

In the southern states east of the Mississippi River, the disease is more common than in the more northerly states, and its increased frequency is variously explained. Some say it is because of the greater number of mules, which have a great tendency to annoy other animals and especially to bite the withers roughly and persistently. Others attribute the prevalence in a great measure to the carelessness of negro owners in the matter of low stables and ill-fitting harness and saddles.

In the states west of the Mississippi River, with but few ex-

ceptions the disease breaks out frequently in enzoötic form, and at once suggests other causes than traumatisms, although these admittedly cause isolated cases here as elsewhere.

Dr. A. H. Baker, of Chicago, viewing the disease from a distance, attributes its wide prevalence in the west to bites and rough handling by other horses when in pasture. Dr. Waugh, of Pennsylvania, observing the disease in the extreme southwest attributes it to rolling on stones due to the torments of insects.

But these reasons do not explain the sudden appearance of the diseases in a large per cent. of horses over a certain area and its disappearance again in the course of a few years.

In Montana it prevails very extensively now, some cases in unbroken animals on smooth ranges devoid practically of serious insect pests. But it is more common in small bands of horses kept in pastures in the valleys, not worked, ridden or stabled, and having no perceivable reason for suffering from any unusual number of traumatisms—yet it will suddenly appear in two or three or even six or eight horses in one small band, in some as poll-evil, in others as fistulous withers and not infrequently both appear at once in the same animal, or one may closely follow the other. Both show a very marked tendency to spontaneous recovery through suppurative processes. It occurs in the stable, too, as well as in the field, and I have seen poll-evil and fistulous withers appear simultaneously in isolated horses kept in good stables, with good care.

(To be continued.)

A PRACTICAL USE OF GUTTAPERCHA IN VETERINARY DENTAL SURGERY.

BY R. C. MOORE, D.V.S.

A paper read before the Missouri Valley Veterinary Association, October 3, 1894.

For some years past I have successfully used Guttapercha in certain dental operations in a manner which I have never found any account of in our literature or other sources. So I thought it might be of interest to the profession.

In the summer of 1886 I was called on to treat a gray gelding six or seven years old, that was suffering with caries of the upper fourth molar. The tooth was nearly gone, and the maxillary sinus was completely filled with hay and other feed in a decaying condition, which had passed there through the open alveolar.

I removed this as well as the remainder portions of the caried tooth, and found the caries had extended to the palatine process of the superior maxillary, eating a crescent shaped cavity opposite the alveolus as large as the half of a half-dollar.

I cleaned out all the diseased bones and gave an unfavorable prognosis on the grounds that the caried palatine plates would not heal. Thus leaving a communication between the mouth and maxillary sinus, allowing the latter to fill with feed.

The horse, however, done fairly well for some months. But during the following winter he lapsed into the same old or worse condition than before the operation. The cavity remained open and the sinus was full of food. Some of which would be discharged through the nose. I gave the case up as incurable.

During the following winter the horse passed into the hands of traders and I soon lost track of him. Some time after this my attention was attracted to what Prof. Williams says in his *Principles and Practices of Veterinary Surgery* in regard to some parties using guttapercha to fill the alveola after removing the tooth.

I reasoned from this that it might be possible to close this cavity in this manner, and so decided to try it if ever an opportunity presented itself. During the following summer a patron of mine traded for the same gray horse, and on examination I found him to be in about the same condition as the fall before. I procured some guttapercha and proceeded to operate as follows: I opened the old trephine hole and cleaned the sinus by irrigation and scraped off all diseased bone. Then I took three sheets of the best pink guttapercha put up for dental use, and put it into a pail of hot water (nearly boiling). As soon as the guttapercha was soft, I took it in my hand and formed it into a ball or egg-shape, so I thought it would about fill the cavity.

Then leaving it in hot water (for it very soon hardens after taking it out of the water), I got the patient ready by placing the speculum in his mouth, and the parts cleaned. Then taking the ball in my left hand and passing it into the alveola through the mouth I pushed it upward and at the same time, with one finger of the right hand in the trephined hole, I pressed down on the upper end of the ball and by this means pressed it outward until it filled the cavity perfectly and formed a good flange above and below to prevent the plug from slipping, and treated it as a single wound. It readily healed, and to all outward appearances the horse was well and remained so for five or six years, at the end of which, notwithstanding my repeated warnings, they allowed the lower tooth to become so long as to push the plug up into the sinus and he was as bad as ever.

Since then I have operated on several of this class in the same way, and always with success, except on one horse, when I tried to substitute dental rubber for guttapercha, and after two failures I had to return to the guttapercha, which proved successful. The rubber was too soft and would not harden sufficiently in the mouth to withstand the pressure of mastication. None of these cases showed such extensive caries of the palatine process as the first, but rather a distention of the alveola process leaving the bone exposed, which did not seem to possess the power of closing up. This may be due to the large size of the cavity, which contains such a large quantity of food as to become a constant irritant. In one case that had been well irrigated several times daily for many months. And on trephining I found the tissues in a clean, healthy condition, the mucous membrane of the sinus having united with that of the mouth through the cavity formerly occupied by the tooth. I operated as above with the same results.

And now, after an experience of eight years, I never hesitate to resort to its use in all cases when the alveola does not show a disposition to readily heal. And I believe I can safely say that few operations have given me better satisfaction than these.

TEXAS OR SOUTHERN CATTLE FEVER.

BY DR. T. A. BRAY, D.V.S., Inspector of Abattoirs No. 46.

A paper read before the Missouri Valley Veterinary Association, October 3, 1894.

Texas or Southern cattle fever is a disease of the blood, causing a destruction of the red corpuscles. A microorganism, which lives within the red corpuscles, is the destroying power

The infection is carried by newly hatched ticks, which inoculate susceptible cattle, directly into the blood. Native cattle can also be inoculated by the blood of Southern cattle by intravenous, or subcutaneous injection, as the microparasite is always present in Southern cattle, even if they have been away from Southern pastures for a few years.

All Southern calves go through a natural inoculation by the ticks, at which age the death-rate is very small; when I say all Southern calves, I think I am right, as the ticks are pretty well scattered all over the territory, where the winter is not severe enough to destroy them.

After they are once inoculated, they are generally safe, as far as the Texas fever is concerned, as the system then seems to be indifferent to the virus. The incubation period is about six to ten days after direct inoculation, but this period may be extended three or four weeks at some seasons of the year.

There are two stages of Texas fever: mild and acute. The mild stage occurs in autumn, is not very fatal, in fact the blood would have to be examined for the microorganism, in order to tell if the disease was present, as the general symptoms are absent.

The acute stage occurs during the hot summer months and is very fatal, especially to mature and aged susceptible cattle. During the winter months, from December first to March first, there is no danger from Texas fever, as the ticks cannot exist in the territory where the susceptible cattle are.

Symptoms.—Dullness, loss of appetite, cessation of rumination, high temperature, from 105° to 108° F., bowels constipated during high fever, and great emaciation following high fever.

After the above symptoms are noted, the blood becomes very thin and watery, which can be easily detected by making small incisions in the skin; bloody urine is passed from the bladder. In addition to the above, ticks are generally present, located usually on the inside or back part of the thighs towards the tail, the skin being thin in those parts. They are also found on other parts of the body.

The bloody urine is not due to discharge of blood from the kidneys, but to a filtration of the coloring matter of broken-down red corpuscles. Temperature continues high until the disease terminates fatally or in recovery, when in either case it may fall below normal, but more apt to in case of a fatal termination. The evening temperature is the highest for three or four days, then the temperature will stay high night and morning until end of the fever—respiration 60 to 100, pulse 90 to 120 and weak. If case terminates fatally, or in recovery, the respiration often falls below normal, after the high fever has subsided.

There are three or four leading features, which enable a person to make a correct diagnosis—the presence of ticks, bloody urine, watery blood and high temperature. In addition to the above the examination of the blood under the microscope, to find the microparasite in the red corpuscles, is a valuable aid, but as this is not practicable to the general practitioner, I will not go into details. Duration of disease in summer months is from six to twelve days.

Post Mortem.—The outward appearance of the skin does not show anything, except the presence of ticks.

The fat and subcutaneous tissue are often a light lemon color. Heart is sometimes spotted with petechia in advanced stages.

Spleen very much enlarged; some that I have weighed going up to $8\frac{1}{4}$ lbs., while the normal spleen is about 2 lbs.—when cut into it presents a dark brownish red color. The peculiar enlargement is due to engorgement with red blood corpuscles.

Bile in gall bladder is changed considerably, being thick, of a yellowish brown color, and a great deal of it.

Liver is enlarged, bile injected and congested, the surface being somewhat tinged with a very light yellow.

Kidneys are enlarged, and of a dark redish brown color.

Bladder usually contains bloody urine, if the case has advanced far enough. Most of the other organs are free from changes to be observed by the naked eye. In some cases I have observed blood extravasations in abdominal cavity.

Character of Ticks.—*Boophilus bovis*, after Dr. Cooper Cur-tice. After the ticks are hatched out they crawl on the cattle, get a good hold, and arrive at adult age in about three weeks, then drop off and commence laying eggs. The laying continues from eight to fifteen days, according to the temperature—each tick will lay about 2,000 eggs. The eggs take from three to six weeks to hatch out, according to temperature—the time for one generation of ticks is from six to nine weeks.

Susceptible cattle can be inoculated by ticks hatched artificially. Newly hatched ticks will live for an indefinite length of time on the ground. Ticks generally attach themselves to parts where the skin is thin, such as the inside and back parts of the thighs.

Treatment.—Little can be said in regard to treatment. After the animal is known to have Texas fever, give some good febrifuge, keep under shelter with plenty of fresh air and pure water, and some nutritious laxative food. Look for ticks daily, remove them when found and destroy them. The susceptible cattle that are inoculated will have the fever, but will not infect other cattle after the ticks are removed; but it is not safe to have other susceptible cattle around, as the ticks may accidentally drop off and lay eggs, which will hatch out in time and do some damage.

Conclusions.—When all ticks are removed from Southern cattle, they may mingle freely with susceptible cattle, without any danger of communicating Texas fever.

Adult egg laying ticks have been scattered on pastures, and susceptible cattle placed on such pastures have contracted Texas fever in absence of Southern cattle.

If Southern cattle are driven through the country that is not infected, they lose the power to infect, as all the mature ticks will drop off in about four weeks, leaving the Southern cattle harmless; but should susceptible cattle follow the trail three or four weeks after the Southern cattle, there would be a good many cases of Texas fever. If Texas cattle and susceptible cattle are placed together, the natives will not contract Texas fever under about four weeks, as it will take about that time for the adult ticks to lay their eggs and have them hatched out.

Sick natives may be a source of infection, when ticks are present. Other means have been tried to inoculate susceptible cattle, such as feeding animals on ground ticks, spleen pulp and on grass, where ticks were known to exist, but all failed. A few other animals beside cattle have been tried, but proved insusceptible to the disease by direct inoculation; sheep for one, as they take after cattle somewhat, normal temperature of cattle 101°F. , respiration, 18 to 30, according to temperature of air and age of animal, pulse from 55 to 70.

Inspection.—The Bureau of Animal Industry has been very successful in preventing Texas fever from spreading over the country, where susceptible cattle are. Inspectors are placed at different stations on the line of the infected districts to see that all cars are marked Southern cattle, also to see that cattle from infected districts are not driven into the territory not infected.

When Southern cattle arrive at destination, they are held in quarantine yards; the cars then taken to a station to be thoroughly cleaned and disinfected in the presence of an inspector. Any out-breaks that may occur are reported and taken care of in a way to prevent any spread if possible.

I think great credit is due Dr. D. E. Salmon, who is chief of the Bureau of Animal Industry, for his untiring efforts in ferreting out the cause of diseases and the prevention of the same.

Parts of this article are from reports of the Bureau of Animal Industry, and the rest from practicable observations at the packing houses.

THE DIAGNOSIS OF TUBERCULOSIS, DEALING ESPECIALLY WITH THE DOSE OF TUBERCULIN TO BE USED IN TESTING FOR TUBERCULOSIS.

By F. L. RUSSELL, V.S.

Prof. Veterinary Science Maine Agricultural College, and Experiment Station, Orono, Maine.

A paper read before the Maine Veterinary Medical Association.

We find that most of those who have published their experience in the use of tuberculin have used a much larger dose of the drug than we have found necessary, and we wish to bring the matter briefly to your attention in a comparison of results as it is a matter of general interest and some importance.

In this country the available tuberculin is mostly from one of two sources. It is either that prepared in Germany by Dr. Libbertz, after Prof. Koch's formula, or that made in this country by the Bureau of Animal Industry at Washington, D. C. This latter preparation is a dilute tuberculin of about one tenth the strength of the imported drug. Whether the strength of either brand is uniform depends upon the care and skill exercised in their manufacture, and we will assume that all reasonable care is used as we have no convenient method of testing them. But we find that from .2 to .5cc of tuberculin for mature animals is generally recommended, while our own experience with a dose of .05cc or even .06cc have been very satisfactory.

In the New Jersey State College herd the first cow tested and one tested at a later date were given .5cc of tuberculin each. Thirty-five cows were given .15cc of tuberculin, and three animals were left untested for want of material. In one case reported in Pennsylvania, .25cc was used with negative results, although an autopsy proved the cow to be tuberculous, and the failure was attributed to the smallness of the dose.

The point I wish to make is that the large dose quite generally used has no advantage over a much smaller one, but on the contrary, some evident disadvantages. If thirty or forty animals as they will be found in a breeding herd of all ages, can be tested

with .1cc of tuberculin with as good results as when the same amount is used for four or five, the matter of expense alone is worth considering. It is well also to bear in mind that the larger the dose the greater the possibility that well animals will react.

In June, 1892, when we first used tuberculin, we were uncertain about the dose proper, but finally decided to try .05cc and tested a herd of five mature cows, of rather more than average size, giving that dose.

To our great surprise, where we had only suspected one, four reacted decidedly to the test. This unexpected result led us to believe that we might have used too large a dose. So, before killing these animals we tested another herd of twelve cows, dividing them into two lots of six each. One lot we injected with .05cc tuberculin to a cow and the other lot with .25cc. Five of these twelve cows gave decided reaction and the diagnosis in each case was verified by the autopsy. From the smaller dose the highest temperatures obtained were 105.5, 105.1 in fourteen hours from the time of infection. From the larger dose 106.7, 103.8, 105.5, in fourteen, sixteen and eighteen hours. This trial tended to confirm our opinion that .05cc of tuberculin is at least sufficient to test a mature animal for tuberculosis; and in subsequent tests we have not exceeded that amount, but have used from .05cc to .015cc according to the age and size of the animal tested.

In all we have had thirty-one animals react under the test. Autopsies were made in each case and the diagnosis was uncertain in but two instances. Most of the animals were but slightly affected. Five or six of them would be considered advanced cases and were readily diagnosed by a physical examination. Two of the thirty-one were calves that were injected with .015cc of tuberculin each. The thirty-one animals together were injected with less than 1.4cc of tuberculin.

Now to make a general comparison of results with some of those who have used a much larger dose.

We find that the average maximum temperature in these

thirty-one cases was 105.4, and the average number of hours after injection before the maximum temperature was reached was fifteen hours.

In the Wisconsin Experiment Station herd from .4cc to .1cc of tuberculin to an animal was used.

The average highest temperature of the twenty-one that reacted under the first test was 105.5, and the average time to the highest temperature was fifteen and a half hours.

The New Jersey State College herd was tested with an average dose for mature animals of .31cc.

The average highest temperature of twenty-five animals that reacted was 104.9 in an average time of sixteen hours. One cow in an advanced stage of tuberculosis was given .5cc, but failed to react.

In December, 1893, the Vermont Experiment Station herd was tested with from .2cc to .3cc to each mature animal.

Twenty-three animals reacted with an average highest temperature of 105.8 in sixteen hours.

I might go on adding to these figures the record of other herds, but perhaps this is sufficient to show that the reaction is as decisive and as quickly obtained with a small as with a large dose of tuberculin.

ACUTE CEREBRAL INFLAMMATION EMBRACING CEREBRITIS AND MENINGITIS.

By C. F. DWINAL, D.V.S., Bangor, Me.

A paper read before the Maine Veterinary Medical Association.

MR. PRESIDENT AND GENTLEMEN:—To comply with a request from the president, Dr. Bailey, that I should prepare a paper upon some subject to be chosen by me, I have selected Acute Cerebral Inflammations embracing Cerebritis and Meningitis, which I will submit to you for your consideration.

I do not propose in this to speak much from experience but to help to bring the disease before your mind. Acute cerebral inflammations are not so commonly met within practice as many

other diseases, and perhaps it was for this reason why I selected this subject.

Under this heading we have encephalitis cerebritis or inflammation of the substance of the brain, and meningitis or inflammation of the coverings of the brain. The brain, the seat of animal life, is situated within the cranial cavity and covered or protected by three membranes, namely, dura mater, which lines the cranial cavity; pia mater, which covers the brain in all its convolutions, and the arachnoid, which is between these two. Inflammation is brought about in the brain and in these membranes in several different ways, as the result of direct violence to the bones of the cranium or some disease of those bones, as the result of some specific fever, from the entrance into the system of some specific virus, as in cerebro-spinal fever, or from exposure to the rays of the sun. The most common cause, however, is from injuries to the cranial bones or disease of them, although we frequently see a sympathetic cerebral inflammation arising from some dietetic error.

Much time has been spent in endeavoring to discover some diagnostic symptoms by which to distinguish cerebral from meningeal inflammation with some success; but we find that inflammation of the meninges quickly extends to the brain, and vice versa; therefore the distinction is not so desirable only so at the outset.

Some of the diagnostic symptoms are those in Meningitis: when the membranes are primarily affected we see the animal in a very excited condition, frightened at every object and avoiding the attendant in every way possible; he is startled at any noise or bright light penetrating the stall; in fact, spasms or convulsions, pain and delirium are the general features of meningeal disease; following these symptoms are diminution or loss of nervous functions.

In cerebral diseases we find the reverse of these symptoms, for from the outset or very early stages there is loss of one or more of the nervous functions, such as paralysis anæsthesia or loss of memory. The animal stands in a sleepy manner, with

its head pressed against some firm object and unmindful of anything going on about him. The most common form of cerebral inflammation is due to some dietetic error causing a sympathetic affection; this form may be distinguished from cerebral disease from other causes by one symptom in particular, that is the normal, or even subnormal, temperature, for in the former there is a rise in temperature.

Two cases which came under my observation will illustrate meningitis and sympathetic cerebritis.

The first, a case of acute meningitis, was in a black gelding which I saw about seven o'clock in the evening. I was told that in the early afternoon he had been taken away to be clipped and being a nervous animal, had caused them some trouble, and in endeavoring to punish him had struck him with something, and had placed upon his head some kind of a controlling bridle and had thrown him down.

When I arrived he was in a stage of great excitement, so much so that they warned me about going into the stall, which was roomy box, saying that he was crazy and would jump on me.

I finally got up to him and put my hand on him; found his head very warm, pulse quick, eyes staring and bloodshot, with pupils contracted owing to his great anæsthesia. I was unable to take his temperature. There was much pain about the head; his appetite was very good, however, and continued so throughout his sickness.

In a few days this delirium changed to the comatose condition, and the animal stood in a corner unmindful of anything. This, however, gradually wore away, and the animal made a good recovery.

Case number two; instance of sympathetic cerebral disturbance was in a bay mare which had been working constantly on a farm; had been fed meal in large quantities for a few days and suddenly refused to eat and drink, and soon began to bore her head against the wall; eyes dull and indifferent to everything, except occasionally she would thrash her head, thus wounding it greatly and then remain quiet again.

Her eyes and lips were swollen very much when I saw her, pulse was hard, full and slow, temperature 101° F, respiration stertorous.

With difficulty we got her from her position in the corner. By giving her a brisk cathartic and local applications to head she very soon recovered. She had been affected this way once before, so I was told, but after this, having advised the owner not to feed any more meal she has never been affected.

These two cases, I think, very well illustrate the two common diseases coming under the subject which I have chosen for my paper this evening.

EVERSION OF THE UTERUS.*

By. W. H. RIDGE, V.S., Trevoise, Pa.

Read before the Pennsylvania State Veterinary Medical Association.

Syn.—Prolapsus of the uterus; inversion of the uterus.

Def.—It is the passage of the uterus out of the pelvic cavity, external to the vulvæ. It is the turning of the uterus inside out.

History and Causes.—It happens at the time of parturition, immediately following or within two or three days after parturition.

It can only happen when the cervix is dilated. Mostly seen in the cow, very rarely in the mare. (The chief object in this paper is to study it in the cow).

It may occur after a short, easy parturition, but is mostly dreaded when labor has been difficult, and the foetus has had much traction upon it.

Retention of the placenta is a fruitful cause, spasm of the longitudinal muscular fibers of the uterus, tympanitic condition of the intestines. Excessive after-pains. Injudicious traction on the foetal envelopes of a flaccid uterus, or pressure of the intestines, against the horn of a flaccid uterus, starting the inversion at this point of the uterus. Constipation is often a cause.

Lesions.—Are those of the uterus hanging external to the

* This paper did not reach us until late in October—hence its late publication.

vulvæ, the mucous membrane being external, the cotyledons being exposed, also the cervix (marking the uterus from the vagina) being external forms a ring around the base of the tumor. At the bottom part, close to the vulvæ, we find the opening of the urethra. We often have all or part of the fœtal envelopes attached to the cotyledons. Many cases we have rupture of the mucous membrane with hæmorrhage. There may be gangrenous patches—rupture of the uterus may occur with the passage of the intestines through the rent.

Symptoms.—The symptoms are of value to us to guard us against its occurrence. After labor (the delivery of the calf) the animal soon begins to strain, and to do so nearly continuously the back remaining arched; soon a tumor appears between the lips of the vulvæ, this being some part of the uterus; with a few more efforts the uterus is passed out entirely. After it is out the animal mostly is quiet for a short time, often stands eating as if there was nothing amiss, then there are cases where the animal strains for more than a day before the uterus is everted or perhaps the vagina is everted a longer or shorter period before the uterus. In other cases at the time of the eversion, we have the animal lie down and be unable to rise, either due to paralysis or hæmorrhage; if due to hæmorrhage we have tremors, animal panting, yawning, and struggling, also a pale mucous membrane and a weak pulse.

Complications.—We may have the paralysis due to injury to nerves; perhaps she is unable to rise due to the great pain, or from excessive exhaustion or from hæmorrhage; later we may have septic infection, peritonitis or gangrene of the uterus in part or whole. We even have a rupture of the walls of the uterus with the passage of the intestines through the opening.

Termination.—With no treatment death must take place, as the uterus will not be replaced spontaneously, and it would be very rare indeed to find a case where the uterus sloughed off and the animal recovered.

The diagnosis is very readily made by the large tumor external to the vulvæ, with the cotyledons exposed, and the

circular ring of the cervix showing as the division between the uterus and vagina. In eversion of the vagina while the tumor may be large, it has a circular striated appearance, and in the center of the tumor we find the cervix.

The diagnosis is also to be made from eversion of the bladder and hernia of the bladder, tumors and cysts.

Sequelæ.—Chronic eversion of the vagina may have metritis, sterility, nymphomania or septicæmia following.

Prognosis.—In the cow, with proper treatment, the prognosis is good. If on examining an animal we find her quiet, not straining, we would look for a favorable recovery, while if the uterus was lacerated, with excessive hæmorrhage and severe straining, it would be much more guarded. I think the mortality is about 8 per cent.

Treatment.—The treatment has been divided into five stages. 1st, preliminary treatment; 2d, reduction of the uterus; 3d, retention of the uterus; 4th, after treatment; 5th, amputation of the uterus.

Preliminary treatment: it is important to have the cow standing, as the uterus is much easier to replace in the standing position; if we are unable to make the animal stand we may raise the hind-quarters by means of bags of straw, or we may attach ropes to the hind legs, then turn the animal on its back, draw the hind parts up by passing the rope over a beam or pulley; it is very rare that this procedure will have to be resorted to. The next is to clean the uterus by removing any foetal envelopes and foreign substances, by washing it in a strong creolin solution. Now, if the animal strains much, we had better give an ounce of chloral, then put her in a narrow box stall. It is important to have two assistants placed on each side of the uterus to lift it by means of a cloth, making traction upwards and forward, making the part of the cloth on the horns the tightest.

Reduction.—After your assistants have raised the uterus on a level with the vulva, you commence to replace it by first commencing at the vulva, replacing the vagina, use both hands edgewise, one hand each side of the vagina, tips of the fingers

in a superior direction, and the little fingers anteriorly. After replacing about a hand's breath we partly close the hand, using the knuckles; replacing between the straining of the animal, we find it best to use pressure on one side at a time, holding all we gain until the cervix has entered the pelvic cavity, when, by a quick move, withdraw one hand, and place it against the most distant part of the tumor, but outside of the cloth, your two assistants pulling forwards on the cloth; by pushing the cloth in with the uterus you strengthen the mucous membrane, making less danger of rupturing or lacerating its surface, but often, after replacing the vagina and withdrawing the hand, the animal makes one desperate expulsive strain, when the whole uterus is thrown out again. We may have this to occur several times before we succeed in returning it properly, but after trying a few times and not succeeding I would administer more chloral, or rather put them under the influence of chloroform, the disadvantages of anæsthetics are we have to have the animal in a recumbent position. Washing the uterus off with a chloral solution, or ice water may assist us. If the straining still persists, and we cannot overcome the straining, then perform tracheotomy, to get rid of the pressure of the abdominal muscles. We need no tube for this purpose. If the uterus is very large owing to the large amount of blood contained in its blood-vessels, it is best to have the assistants cross the cloth, the one on the right side taking the ends of the cloth on the left side, making steady pressure, keeping the distal end the tightest; by this means drive as much of the blood into the body as possible. Or we may bathe the uterus in cold water and bandage with a wide elastic bandage, but we will not find one case in ten that will require the bandages.

After you have returned the uterus, explore the uterine cavity the full length of your arm, to see that no part of the uterus has remained inverted, or tucked in upon itself, as the turning in of the end of a glove finger.

You will see stated that we are to smooth out all wrinkles in the mucous membrane. I think this of little consequence, as

you can smooth out all wrinkles in the body, and leave the end of a horn tucked into and towards the body, and you will have the animal strain until the whole is again everted. After every part is in the best possible position we can place it. I then pour pure creolin on my hand and pass my hand over the mucous membrane of the uterus, as I think it bad practice to inject fluid disinfectants at this period, as the fluid often starts up the straining, while the creolin mixes with the secretions, making the cavity aseptic.

Retention.—There are several means of retention, but I have decided upon two ways as being the best and safest: they are sutures and the pessary.

Of course there are many cases that by raising the hind parts and letting the animal stand on manure, etc., will be all that is required; also the application of a truss might suffice, but I would never trust a case to these methods. I have used the pessary in about one half of my cases, with an occasional failure. Once by the pessary rupturing the uterus, and twice by the pessary being thrown out with the uterus, but in most cases it answers very well. I will first describe my mode of application.

An old spade or manure fork handle make a good pessary. Cut the handle off about eighteen inches in length, pad the end with oakum and cover with a cloth, making the padded end about four inches in diameter; cover the whole pessary with carbolized oil. Have a rope about forty feet in length, tie the middle of the rope to the handle of the pessary, place the padded end in the uterus, pass the ropes each side of the tail, tie a knot over the croup, pass the ropes to the withers, tie them together, now pass the rope each side of the neck, tying them together in front of the sternum, pass the ropes between the front legs, then each side of the body, and through one rope that runs along the back (each rope taking a separate rope along the back). Now pass the rope between the udder and hind leg on each side, then up to the handle of the pessary, drawing the pessary into the uterus until the handle touches the vulva. By tying a pessary in this manner it will rarely be thrown out or injure the animal.

It is very seldom that a pessary need be left in longer than three days, or it can be taken out the next day, if there is no straining. The next treatment is the sutures. We want strong sutures: heavy muslin one inch wide makes good sutures, or better, tape one inch wide. The frog seton needle is the proper instrument to put in the sutures with. The tape should be a little over a yard long, and be sure that there are no weak places in it. Now thread your needle, pick up the skin over the point of the right schinue opposite the superior third of the vulva, pass the needle through, taking about one inch of the skin, pull the thread from the needle, then withdraw the needle, and pull through the suture, thread again and pass through the lips of the vulva, in the superior third, in the same manner as was done through the skin, then pass through the skin over the left ischium, then pass the suture over to the right side again without suturing the vulva, then pass the suture through the same amount of skin over the ischinue opposite the inferior third of the vulva, then pass through both lips of the vulva in the inferior third, then through the two ends of the sutures across the vulva and tie in a secure knot. This will stand all the straining the animal is pleased to give it. Wash the genital parts with a disinfectant solution. these sutures can be left in for any reasonable time. I have had them in one week many times, and I have never had them to tear out or any complication, except once, where the suture broke, not being strong enough, and had to be replaced with a stronger one.

If we have a frog seton needle this is the easiest, quickest and best way we can retain the uterus. I have had animals to strain until I could see the uterus pressing between the sutures, but the next day be all right.

Therapeutic.—A few doses of canabis indica often stops the straining. Opium is apt to cause a constipation and prolong recovery. But chloroform and ether are useful at times. As a preventative measure, I think chloral or a mixture of ether camphor canabis indica are good, also chlorodyne has been credited with doing good; of course one should guard against the bowels

becoming constipated. I think the therapeutic measures are more indicated in the complications which with amputation would make this paper take up too much of the time of our meeting.

PATURIENT APOPLEXY IN THE COW; A NEW METHOD OF TREATING THIS DISEASE SUGGESTED.

BY R. H. HARRISON, D.V.S., Atchison, Kansas.

A paper read before the Missouri Valley Veterinary Association, October 3, 1894.

The practitioner having city or country practice is familiar with this condition among dairy stock, and knows with what poor results he successfully treats it. It is an affection of milch cows, and, as a rule, affects those that are plethoric and deep milkers, who have an *easy*, rapid labor. It is rare to see a case before, during or after parturition in a lean animal, although she may be a deep milker; or in a fat one, where the labor is difficult and prolonged.

Many theories have been advanced as to the cause of this condition, both in the cow and the state similar to it in woman.

Lever, Braun and Frerichs ascribe the condition in woman to an excess of albumen in the urine, together with a retention of urinary elements in the blood; this is not true of the cow; in rare cases we have traces of albumen in the urine during pregnancy occurring during the latter stage, but I have been unable to find any during the attack or after this disease. If the urine has been retained very long in the bladder, it becomes very strong of ammonia.

Other investigators consider the condition due to septic poisoning from the entrance, through lacerations in the os and cervix of septic material. I have seen but one case where an abrasion was found, although I always look for trouble, which is treated if found, antiseptically.

All will agree with me that there is an increased arterial pressure during pregnancy, and it is reasonable to suppose that when the foetal and maternal circulation is so quickly discontinued,

and the womb which has been surcharged with blood, contracts after the expulsion of the foetus; and at the same time as the foetus is expelled, the intra-abdominal pressure is much lowered, there must be an excess of blood thrown back on the mother. This is manifested by the hyperæmia of the brain and spinal cord; this latter condition is demonstrated by post-mortem examination, when it is found that the hyperæmic condition has passed on to inflammation, and as a result we find a collection of serum in the ventricles of the brain, and often in the meninges as a result of stasis.

The patient very shortly after calving, as a rule, lies or falls down, and is in a state of delirium, which quickly passes into a condition of coma, becoming more and more profound, until death intervenes from paralysis of the centers of respiration and circulation, or from carbonæmia. It is a noteworthy fact that in this condition *both* the *voluntary* and *involuntary* muscles are more or less affected, a gradual extending of paralysis becomes more and more complete.

The treatment laid down in human and veterinary works is depletion by means of cathartics; venesection has been for a long time discarded. It is well to bear in mind the great magnitude of the stomachs in cows, and that they are in a state of partial or complete paralysis, so that enormous doses of acute cathartics have no effect, or their action is so tardy.

I have followed a method of treatment during the last few years which has a percentage of 60% when I have been able to utilize it. Cases otherwise treated 80% have died.

I wish to simply lay the procedure before the association with the results obtained, as a suggestion, so that if others try it and get results, we may have gained a means of saving valuable dairy stock, and help our profession to something new and useful.

Procedure.—Animal treated in natural position. The bladder is emptied carefully by catheter, the fæces in rectum and lower bowel evacuated by copious enematas, the nostrils and mouth cleaned free from mucus and dirt. An application of ice

and salt made to the poll, a solution of salt and water, 10 grains salt to OI. of water, heated to the temperature of 100° F. is injected into the jugular vein, the point of selection being the upper third of the neck.

The apparatus used for this purpose is Dieulafay's aspirator, manufacturers, Codman & Chentleff, of Boston; this is Patain's modification of Dieulafay's aspirator.

The needle is introduced into jugular vein with point directed toward the heart. *Care* being taken that no air is allowed to enter, after the solution has been injected remove the needle, and the wound or puncture may be compressed with the finger for a moment,

It is a physiological fact that the blood maintains a constant specific gravity, which if increased, the fluid relieves itself, by pouring out through its depurative passages the excess.

In from twenty minutes to one half hour the pulse from slow and full becomes increased in action almost tumultuous; temperature rises to 102° . Respiration quickened, and bowels begin to move, the muzzle becomes moist, and later the body is bathed in perspiration. Purging may ensue, but I have seen but two cases where it became alarming and then it was checked in the usual way. The animal gets up, and although groggy and bewildered for a short time, begins to notice and care for her calf, and to eat. I have found that one attack does not necessarily predispose an animal to another at the next time of her coming in, although if in the same condition at the time, I have seen it occur.

I think care in feeding in plethoric cases is a wise precaution to take in avoiding an attack of this trouble. All grain should be withheld for a time before calving. This condition I have not witnessed in mares. In one case I attended it was a question between it and azoturia.

As to the condition occurring during or previous to labor, I think the cases are rare. I have seen but two cases which occurred before and one during labor. In the first two, delivery was induced by artificial means, one recovered rapidly, while the

other was fatal. In the case occurring during labor a dead fœtus was found, with head protruding from the vulva, with the fore extremities turned backward, which was removed, the mother at the time was in a state of profound coma, which ended in death.

It has been suggested to irrigate and disinfect the uterus in this condition, but I would not advise it unless by manual examination the uterus is found lacerated, which I have very rarely found. The placenta, which is very seldom retained, should be removed, and the vulva and buttocks rendered aseptic by antiseptics.

I have seen very disastrous complications from irrigating the womb of the cow, it will be remembered the horizontal position of the organ, and it is common to find after this procedure a metritis or endometritis set up by some of the fluid which has been left.

REPORTS OF CASES.

A LARGE ABDOMINAL HERNIA SUCCESSFULLY TREATED.

By E. E. BITTLES, V.S., Union City, Pa.

Thinking it might be of interest to some of my colleagues I relate the following case: I was called about seven o'clock in the morning to see a valuable horse owned by Jas. Fosburg, of Union City, Pa. During the night the horse had been kicking and got straddle of a post having a top three by eight inches square, and five feet from the floor. But when found in the morning was standing pawing and sweating, and seemed to be in severe pain, and a hernia as large as a half bushel measure showed in the left flank. The hair was rubbed off, and the integument was black and body bruised.

I told the owner I thought it rather a doubtful case, but he insisted on my operating, so I led him out on the lawn, put the hobbles on and cast him with his left side up. Then I washed the parts well with a solution of creolin one to twenty. I then placed my hook knife, sutures, sponges, etc., in a solution of creolin of the same strength. Then placed a strap around the

left hock, so an assistant could roll him in any position that it might be necessary to have him. I then took a two bushel grain sack and placed in it a sponge that I had saturated in two ounces of chloroform, then drew the sack over the horse's head, holding it close around his head. In one moment he was thoroughly under the anæsthetic.

I gave an assistant the sack, and told him when the horse began to wink, to pull the sack over his nose for a short time. I then took my hook knife and made an incision about twelve inches long over the hernia, just cutting through the integument, and with my finger I broke down a small quantity of cellular tissue, coming onto the pelvic flexure of the great colon, which I returned. I then returned a number of feet of the small bowels and the floating colon.

I saw I had a rupture of the abdominal muscles and tunic, commencing within about two inches of the linea alba and extending about half way to the transverse processes of the lumbar vertebræ. Using a catgut suture, commencing at the inferior part of the wound I stitched it over and over, taking good, deep stitches about three-quarters of an inch apart, using iodoform freely. I then sutured the integument with interrupted sutures and washed it with a solution of creolin, dusting it with boracic acid.

I left the hobbles on until he was entirely out from under the influence of the anæsthetic ; then let him up and placed him in a box stall, tying him so he could not lie down. The first twelve hours did not allow him any feed, but some water.

Next morning found horse pawing for feed ; quite badly swollen ; pulse 52, temperature 101° . Removed the two inferior stitches in the integument, allowing about a pint of serous fluid to escape. Took my injection pump, and daily washed it out with a solution of creolin. The first twelve days the pulse varied from 48 to 60, and the temperature from $100\frac{1}{2}$ to 102° . His daily feed was eight quarts scalded oats and four quarts of bran. At the end of twelve days began to feed some hay, and at the expiration of twenty-five days he was doing his regular driving.

EXTRACTS FROM FOREIGN JOURNALS.

PROGNOSIS AND THERAPEUTIC VALUE OF THE PRODUCTS OF THE
BACILLUS OF GLANDERS.

BY M. BONOME, Padua.

The author has made numerous experiments upon the action of malleine in animals and even in man.

All animals have not an even sensibility to the products of the bacillus. The donkey and the cat lose flesh rapidly and suffer with conjunctival and nasal catarrh. At times they have pustulous eruptions and a lowering of the temperature when very small doses of malleine are given every twenty-four or forty-eight hours. Rabbits react very easily; they die very readily after subcutaneous injections of a few drops of malleine. Dogs and Guinea-pigs, affected with experimental glanders, react by rapid emaciation and extension of their glanderous lesions.

As a means of diagnosis the author has used it in thirty-two suspicious cases; twenty-four reacted; eighteen of these were destroyed, and the diagnosis confirmed in seventeen. The eighteenth had none. The other six animals, which were not destroyed, did not show any other indication of glanders, and the inoculation of their secretions gave also negative results.

Experimented on man malleine at the dose 1-15 to 1-20 of a cubic centimeter, has given a febrile reaction, with increased circulation, polyuria, headache and swelling of the mucous membrane affected. The reaction lasted from six to thirty hours. Similar doses, given after a rest of two or three days, produced a great improvement in the manifestation of the patient.

In spontaneous glanders Mr. Bonome has obtained good results. Fourteen injections of malleine, made in forty-five days, were followed by the disparition of the symptoms, and have remained free of them for over a year. Dogs affected with glanders were also cured by injections of malleine. Glanderous Guinea-pigs were not cured with the malleine, except a few which were treated with the serum of beef blood, which had been for two weeks in contact with the bacillus of glanders.—*Inter. Cong. of Rome.*

A RARE CASE OF TUBERCULOSIS IN THE HORSE.

BY PROF. G. P. PIAUA, Milano.

From this case the author comes to the following conclusions :

1. In tuberculosis of horses, the bacilli have the same characters as in tuberculosis of other animals, as far as form, dimensions as their way of action with the various reactivities. 2. But the tubercles of horses have characters which distinguish them from those of other animals. For instance, the caseification is missing, or at least very rare ; they are very vascular, even in the most central parts ; they contain numerous large (giant) cells. 3. All these peculiarities are independent of the special properties of the bacilla ; a rabbit inoculated with equine tuberculous matter has contracted tuberculosis, which presented all the characters of this disease in the rabbit.—*Inter. Cong. of Med. of Rome.*

ŒSOPHAGEAL JABOT IN A COLT.

M. A. LABAT.

This case is interesting from the double abnormality which gave use to it. The subject is aged seven months. He has always presented a difficulty in swallowing, and at three months developed a tumor on the right side of the neck. This increased rapidly, and manifested itself when, and immediately after the colt had been sucking. At other times the neck is normal on both sides. The condition increased as the animal grew older, the tumor becoming very large, extending beyond half of the neck and giving rise to repeated severe disturbances of digestion. The condition increased in severity and one day he was found dead.

At the post-mortem it was found that the œsophageal dilatation, which was displaced on the right side, was enormous and extended into the thoracic cavity as far as the base of the heart. It seemed to be divided in two portions by a semi-contraction, which is seen at a point where was the tracheal bifurcation ; it twists itself as an S and returns to the left, where beyond it is again dilated. By a peculiar arrangement the trachea itself had undergone changes in its normal position, its posterior face being twisted to be related to the jabot on the right side.—*Rev. Veter.*

COMPLICATIONS OF ACTUAL CAUTERIZATION BY THE APPLICATION OF BICHROMATE OF POTASH OINTMENT.

BY THE SAME.

The subject was lame on one of his hind legs, and was fired in lines on the tendon and canon of that leg. The effects of the cauterization appearing too light, a friction of ointment of bichromate of potash was applied.

The first result was a severe swelling of the leg. Then the fired surface became inflamed and extensive vegetations began to appear, and increased in such a way that in a short time two enormous tumors existed. Situated one on each side of the leg, these growths were hemispherical, somewhat regular and smooth on their surface, though slightly bleeding to the touch, painless, very hard, fibrous like and surrounded at their bases by several smaller ones.

The animal was destroyed for economy sake, but the danger of such application is nevertheless well exhibited.—*Ibid.*

TRACHEOTOMY IN THE TREATMENT OF NASAL HÆMORRHAGE.

BY M. SOUCAIL.

This case is that of a heavy draught horse, which, in falling while in the shaft of a heavy truck, severely injured himself about the head and had a profuse hæmorrhage from the nostrils which threatened to be fatal if not stopped at an early moment. This hæmorrhage is due to laceration of the external maxillary artery, of the superior dental and of the nasal artery.

Leaving this last stopped by itself, the facial is ligatured but the superior dental cannot be secured, and plugging of the wound is applied. As this fails, other means are employed, such as cold water, bandages and so on, but all without avail.

Having observed that the hæmorrhage has increased at the time of expiration, the author decides to prevent the respiration through the nasal cavities and had recourse to the operation of tracheotomy to prevent it. This is followed by a sudden arrest in the hæmorrhage. The lesions of the face secured proper attention, and recovered in due time.—*Ibid.*

SARCOMA OF THE SUBLUMBAR REGION IN THE COW.

Bx M. LARRIEU.

This animal had a fracture of one of her horns, for which treatment was required. After a month of treatment the wound had not cicatrized, but during that time the animal had presented peculiar symptoms which ended in her death. She showed disturbances of her digestive apparatus which justified a diagnosis of gastro-enteritis, but which remained rebel to all forms of treatment, and on further and closer examination it was suspected that she might be suffering with a renal tumor involving the sublumbar ganglions. She soon developed paraplegia, with a large collection of fluid in the abdominal cavity, and ultimately died.

At the post-mortem a large tumor, weighing twelve pounds, was found situated in front of the right kidney, and which, under examination with the microscope, presented the character of a large fasciculated sarcoma. The right kidney was atrophied and the bladder contained a thick muco purulent urine.—*Ibid.*

CONTRIBUTION TO THE STUDY OF LIVER DISEASES IN DOMESTIC ANIMALS.

BY M. L. BEAUDAIS.

1st Obsv. Norman cow, six years old, with a history of good health. Since her last calf she has lost flesh; lately her milk has stopped, her coat is staring, conjunctives are yellow; respiration accelerated; temperature normal, auscultation negative as far as affections of the lungs or of the heart. No diagnosis made. For five days she was submitted to a treatment of sinapisms under the abdomen, sulfate of sodæ, and gentian without success. She died. At post-mortem the liver is found enormous, softened and easily torn; Glisson capsule thickened, hepatic tissue reduced to a dark wine colored mass, gall bladder enormously distended with dark bile, kidneys enlarged but normal, like all the other organs.

2d Obsv. Chestnut mare, fourteen years. For six years has never been sick. Her work is moderate, she feels well. For the last two months she has failed in flesh, she is less active, she stops while at work, she lays down when in the stable as an animal that is tired, she has yet good appetite, a moderate drinker in time past, she has now great thirst, urine normal.

The symptoms are: Yellow mucous membrane, auscultation negative, rectal exploration without result, temperature normal, easily tired when urged to trot; and then the respiration is labored and rapid. She has at times profuse sweating all over the body. Notwithstanding a tonic treatment of arsenic, she grows rapidly worse, and is ultimately destroyed.

Post-mortem: the liver is enlarged, weighing over eighteen pounds, Glisson capsule is readily torn, the hepatic tissue soft and reduced in a mass similar to that of the preceding case; kidneys very large but normal. All the other organs healthy.

These two cases of softening of the liver in two different species of animals are certainly interesting as far as their symptoms, their lesions and also the length of time of their existence.—*Ibid.*

BIBLIOGRAPHY AND EXCHANGES.

Pathology and Therapeutics of Domestic Animals. By Prof. Friedberger, of Munich, and Fröhner, of Berlin. Translated by Prof. W. L. Zuill, M.D., D.V.S., of Philadelphia, with the notes of the French translators and selections from those of Prof. Trasbot, in two volumes.

The first volume will be ready on or before November 30, 1894, and will contain diseases of the digestive, urinary, genital and circulatory organs with the diseases of the skin.

The second volume will be issued on or about January 1, 1895, and will contain diseases of the apparatus of locomotion, nervous diseases, those of the respiratory apparatus, chronic

constitutional affections, infectious diseases and epizootic properly called. The work is published by the author.

Journal of Comparative Pathology and Therapeutics.—Edited by T. McFadyean, M. B. B. Sc., T.R.S.E., Royal Veterinary College, London, September, 1894.

The third part of Vol. VII., of this excellent journal is before us. Besides handsome illustrations relating to fracture of cervical vertebræ of horse, supernumerary digit of a colt with general articles on anthrax, loup-ill in sheep, Sterility in the larger domestic animals and parasitic gastro-enteritis in cattle, there are three editorials on the diagnostic value of malleine on the bacillus of anthrax and tuberculosis in young cattle.

The reviews, clinical articles and abstracts furnishes to the reader much valuable matter of interest.

Lehrbuch der Pharmakologie für Thierärzte. By Dr. G. Nülbr, Professor in the High Veterinary School of Dresden, with 71 original plates.

This book is a treatise on the entire field of Pharmacology, Materia Medica and Chemical Pharmacy, specially arranged and prepared for the veterinary student.

In this edition careful studies and considerations of new drugs with their various uses are presented; and it being, so to speak, a combination of two works, viz: the third original edition and the Austrian Veterinary Pharmacopoeia, it will be found to contain a large amount of valuable material of the greatest interest.

Journals Received.—Berliner Thierärztliche Wochenschrift. Annals de l'Institut Pasteur. Progrès Vétérinaire. Veterinary Journal. Journal of Comparative Medicine and Veterinary Archives. (September, '94.) Veterinarian. Veterinary Record. Our Animal Friends. Veterinary Magazine, (September.) Clinica Vétérinaire. Bulletin of Pharmacy. Prepe Veterinarie. Recueil de Médecine Vétérinaire. Zeitschrift für Fleisch und Milchhygiene. Gazette de Medicina Veterinaria (Madrid.) Therapeutic Gazette. Revue de Médecine and Médecine Veterinaire. Der Hufschmied.

Pamphlets.—Atlantic Cheire. Southern Medical Record. Record West Virginie Agricultural Station. Report of Kansas State Board of Agriculture. Iowa Health Bulletin. Philadelphia Polyclinic. Bulletin Agricultural Station of Louisiana. Lehrbuch der Speciellen Pathologie und Therapie für Thierärzte. Deutsche Zeitschrift für Thiermedizin und Vergleichende Pathologie.

STAMPING OUT TUBERCULOSIS.

REGULATIONS ADOPTED BY THE CATTLE COMMISSIONERS OF MASSACHUSETTS.

First.—All the states and territories of the United States, the District of Columbia, Canada, Great Britain, and all other localities without the limits of this commonwealth, are hereby declared infected districts.

Second.—It is hereby ordered that all neat cattle brought within the limits of this commonwealth from any of said localities on and after November 5th, 1894, are hereby made subject to quarantine until they have been inspected and released by this board or one of its members thereto duly authorized.

Third.—Except as hereinafter provided no such neat cattle shall be unloaded, except in case of accident, for any purpose whatsoever within this commonwealth, at any place or places other than at such quarantine stations as are herein designated, or which may hereafter from time to time be designated by this board, unless upon written permit signed by the board of cattle commissioners or one of its members.

Fourth.—The stockyards in Brighton and Watertown, and the premises of the New England Dressed Beef and Wool Company in Somerville, are hereby designated as quarantine stations.

Fifth.—All neat cattle entered at any quarantine station, except as herein provided, shall immediately be placed in quarantine, and so remain at the expense of the owner or consignee, for a period of not less than twenty-four hours, and shall be subject to the tuberculin test. This test shall be made only by the Board of Cattle Commissioners or one of its members, or a duly authorized agent thereof, and without expense to the owner.

Sixth.—Every such animal which, in the opinion of this board or any of its members is affected with tuberculosis, will be condemned and slaughtered as provided in sections 45 and 53 of chapter 391 of the acts of 1894.

Seventh.—All animals which upon such inspection shall be adjudged free from tuberculosis and other contagious disease shall be branded with the seal of the commission. This brand will be placed upon the right horn and the outside of the right front hoof, on those animals having horns. Hornless cattle will be branded upon the right shoulder and upon the outside of the right front hoof.

Eighth.—All neat cattle passing through this commonwealth consigned from points without its limits for exportation from this state will not be examined as herein provided, but such animals shall remain in quarantine until transported without the limits of the commonwealth.

Ninth.—All neat cattle brought within this commonwealth consigned directly to the Brighton abattoir for slaughter shall be confined by themselves for identification, and shall not be released except after an examination as above provided, or except for immediate slaughter.

Tenth.—It shall be the duty of every person or persons, corporation or corporations, desiring to drive or cause to be driven, any neat cattle into this state from any point without its limits, to notify in writing the Board of Cattle Commissioners of his, their or its intention so to do, which notice shall state the town or city within this commonwealth through which it is the intention to enter, and the time when the drove will arrive within such city or town. After crossing the border all such cattle shall be immediately placed in quarantine within the limits of such city or town, at the expense of the owner or consignee, and shall there remain until they have been examined and branded or destroyed, as hereinbefore provided.

Eleventh.—All neat cattle branded as herein provided shall be free to all markets in this commonwealth without further quarantine restrictions, until such time as the brand has disappeared from the hoof, except as provided by law.

Twelfth.—No person shall sell or offer for sale, or have in his possession except under quarantine within the stockyards at Brighton or Watertown, except as provided in sections 8

and 9, any neat cattle which are not branded as provided in section 7:

Thirteenth.—It is further ordered that a copy of this order shall be sent to each city and town throughout the commonwealth, and that every town shall cause a copy thereof to be posted in two or more conspicuous places within its limits, and shall cause a copy of the same to be published once a week for three successive weeks in a newspaper published therein, or if no newspaper be published within the limits of said town, then in a newspaper published within said county; and that each such city shall cause a copy of the same to be published twice a week for three successive weeks in a newspaper published within its limits.

Fourteenth.—This order shall take effect upon November 15, 1894.

VETERINARY LEGISLATION.

L. W. DINKELSPIEL, LL.D.

CHAP. 674.

AN ACT to amend the public health law, and making an appropriation to carry out the provisions thereof, became a law May 12, 1894, with the approval of the Governor. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION I.—Section sixty-two of the public health law is hereby amended to read as follows :

SEC. 62.—Destruction of domestic animals affected with tuberculosis or glanders —Whenever the State Board of Health may deem it necessary for the prevention of the spread of tuberculosis in cattle, such Board may cause to be killed, any animal affected thereby, or which, by contact with diseased animals or by exposure or infection or contagion therefrom, such board may determine is liable to contract or communicate such disease; but no such diseased animal shall be so killed on account of tuberculosis unless first examined by a veterinary practitioner in the employ of the State Board of Health, and if desired by the owner, appraised as hereinafter provided. A local board of health shall, pursuant to rules and regulations prescribed by

the State Board of Health, caused to be killed, every horse affected by glanders, found within its jurisdiction, but no horse shall be so killed on account of glanders until the value thereof be appraised as hereinafter provided.

SECTION 2.—Section sixty-three of said act is hereby amended to read as follows:

SEC. 63.—Compensation to owners.—To determine the value of such animal, the comptroller shall designate some competent, disinterested person, residing within the judicial district in which such animal may be, to act as appraiser, with an appraiser to be selected by the owner of such animal, who shall proceed to appraise the value thereof. In case of a disagreement between the two appraisers, the third appraiser shall be selected by them, and the estimate of the value of either two of them shall be final. The animal shall be appraised at its sound value, provided, however, no single unregistered animal shall be appraised at more than sixty dollars; and no horse affected with glanders shall be appraised at more than fifty dollars. Each appraisal shall be in writing, signed by the appraiser or appraisers agreeing, and shall be delivered by them, if the animal be suspected of tuberculosis, to the veterinary practitioner in charge of such animal, and if the animal be a horse affected with glanders, to the secretary of the local board of health having jurisdiction thereof. Upon the delivery of such appraisal, such animal shall be killed, as hereinbefore provided; and if it be killed on account of tuberculosis, the veterinary practitioner in charge thereof shall forthwith make a post-mortem examination of the animal, and if it shall be discovered on such post-mortem examination that the animal was affected by tuberculosis, the owner of the animal shall be entitled to receive one-half of the appraised value; provided, however, that not more than sixty dollars shall be paid for a diseased registered animal and not more than twenty-five dollars shall be paid for a diseased unregistered animal, but if such examination of the animal killed on account of tuberculosis discloses that the animal was not affected with tuberculosis, the owner shall be entitled to receive the full appraised value. The written appraisal of the value of an animal killed on account of tuberculosis, and a written statement of the result of the post-mortem examination thereof, signed by the veterinary practitioner in charge thereof, shall forthwith be transmitted by such veterinary practitioner to the secretary of the State Board of Health, who shall file the same in his office. The secretary of the local board of health having jurisdiction in the case of a horse affected with glanders shall in case such horse is killed, upon receipt of the written appraisal, signed by the appraiser or appraisers, as hereinbefore provided, forthwith make and sign a certificate of such fact, and transmit such appraisal and certificate to the secretary of the State Board of Health, who shall file the same in his office. Upon receipt, from the veterinary practitioner, in the case of an animal killed on account of tuberculosis, or from the secretary of the local board of health, having jurisdiction in the case of a horse killed on account of glanders, such secretary of the State Board of Health shall forthwith make a written certificate, signed by him, setting forth the name and post-office address of the owner of the animal killed, and the amount which such owner is entitled to be paid on account of the killing of such animal, and shall forthwith transmit such certificate to the comptroller, who shall issue his warrant upon the treasurer for the payment to such person of the amount so certified, and shall mail the same to such person at his post-office address as it appears by such certificate. No compensation shall be allowed to any person who shall have wilfully concealed the existence of

tuberculosis or glanders among his animals, or upon his premises, or who, directly or indirectly, by act or wilfull neglect, shall have contributed to the spread of such diseases, or either of them, and no compensation shall be made under the provisions of this act to any owner, for animals killed unless the animal or animals killed shall have been actually owned and possessed by the owner thereof, within this state for a period of three months prior to such condemnation. The appraisers to be appointed as aforesaid, by the comptroller, shall hold office during the pleasure of the State Board of Health. Each appraiser so appointed shall receive as compensation the sum of five dollars per day for each day actually employed, and shall also be paid his actual necessary disbursements, but no claim for services or disbursements shall be allowed or paid unless accompanied by a verified detailed statement thereof.

SEC. 3.—The sum of thirty thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any funds not otherwise appropriated, for the payment of claims to owners of animals killed in pursuance of the provisions of this act.

SEC. 4.—This act shall take effect immediately.

STATE OF NEW YORK, }
Office of Secretary of State. } ss.

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom, and of the whole of said original law.

GIVEN under my hand and the Seal of office of the Secretary of State, at the city of Albany, this nineteenth day of May, in the year one thousand eight hundred and ninety-four.

JNO. PALMER,
Secretary of State.

CORRESPONDENCE.

Editor AMERICAN VETERINARY REVIEW:

DEAR SIR :—The writer of the sketches from the last meeting of the United States Veterinary Medical Association, has it that I returned to Chicago not very well pleased or convinced with Dr. Salmon's defence of the two year schools. This is true. But when the same writer alleges that "Dr. Salmon's arguments were so powerful that no one dared to answer them," I wish to take issue with him. To my mind it would have been a pity had anybody replied to those arguments, for certainly it would have weakened the effect they made on the audience. Apparently nobody shared the opinion of Dr. Salmon. His eu-

logy was sweet but weak, and he has risked to make himself the champion of a dying cause.

When anybody attacks the United States meat inspection service, Dr. Salmon's patriotism gets immediately aroused, and he violently throws mud at the foreigners. But in weighing the conditions of our profession in our own country Dr. Salmon does not exhibit that patriotism and pride which we ought justly expect from him in his influential position.

I do not write this to criticise but to suggest, for I firmly believe that the time has come when our American veterinary colleges—all of them—need remodelling to bring them up to a higher plane, and I sincerely hope that before long the worthy chief and president of the Washington College will join hands with us in helping to accomplish this patriotic duty.

OLOF SCHWARZKOPF.

Editor AMERICAN VETERINARY REVIEW :

DEAR SIR :—In my article in October number of the REVIEW a typographical error was made on the second last line of page 504; it reads, "was of fibroid duration;" whereas, it should read "was of fibroid nature." Please correct in your next issue, and oblige,

Yours truly,

J. C. MEYER, *Sec.*

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular meeting of the above-named association was held on Tuesday evening, October 2d, 1894, at 155 West 56th St., with the president, Dr. R. S. Heidekoper, in the chair.

On roll-call the following members were present, viz.: Drs. Delaney, Ellis, Giffen, Glover, Huidekoper, Hanson, Neher, Machiu, O'Shea, Parkeson, Robertson, Ryder.

The minutes of last meeting were read and approved.

Board of Censors.—Reported favorably the names of Drs. Francis H. Flagge, Bruce Mackey, and Robert Finlay.

Moved and seconded that the report be received. Carried.

Papers.—Letters were received from Drs. Sherwood and Gill, the essayists of the meeting, stating they could not be present.

Reports.—Judiciary Committee.—Dr. Giffen, chairman, reported that the committee would report at the next meeting.

Committee on Charges.—Dr. Neher, chairman, stated that the committee would give a complete report at the next meeting.

Election of New Members.—Moved by Dr. Robertson and seconded by Dr. Neher that the secretary cast a favorable ballot for Drs. Flagge and Mackey. Carried.

The election of Dr. Robert Finlay followed, the president appointing Drs. Delaney and O'Shea tellers.

Moved by Dr. Giffen and seconded by Dr. Hanson that the name of Dr. Finlay be considered at the next regular meeting. Lost.

On ballot, eleven votes were cast, of which six were in favor and five against the election of Dr. Finlay.

A discussion then followed as to what constituted an election, a two-third or majority vote, as the by-laws did not state. The president ruled that a majority would elect, and declared Dr. Finlay a member of the association.

Applications for Membership.—Dr. Wm. C. Rutherford and Leo. Brusacher were referred to the censors.

New Business.—Moved by Dr. Robertson and seconded by Dr. Hanson, that a committee of three be appointed to revise the constitution and by-laws. Carried. The chair appointed Drs. Robertson, Hanson and Neher.

Dr. Robertson then moved that a committee of three be appointed to select a place of meeting for the association. Carried.

Chair appointed Drs. Robertson, Glover and Gill.

Essayists for next meeting, Neher and Gill. Adjourned.

MAINE VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the Maine Veterinary Medical Association was held at the Elmwood Hotel, Waterville, October 10th, at 8 P. M., President Dr. Bailey in the chair.

The following members answered to the roll-call: Drs. Bailey, Lord, Russell and Choate.

The minutes of the last meeting were read and accepted.

The proposed amendment to the by-laws was adopted as follows: It is proposed that Section IV., Article 3, five members shall constitute a quorum for the transaction of business, shall be amended so as to read, "three members shall constitute a quorum for the transaction of business."

The Committee on Professional Fees was requested by the president to report at the next meeting.

Drs. W. D. Farnum, Rockland, Alfred L. Murch, Bangor, H. S. Usher, Hollis, Maine, were elected to membership in the association.

Dr. Dwinal read a paper on Acute Cerebral Inflammation, and embracing cerebritis and meningitis, followed by discussion.

Dr. Russell read a paper on Diagnosis of Tuberculosis, which was well discussed.

A motion was made and seconded that the association tender the essayists a vote of thanks for the able manner in which they treated their subjects. Carried.

Drs. Lord and Choate were appointed to read papers at next meeting.

The next meeting will be held at Augusta, January, 1895.

H. H. CHOATE, D.V.S., *Sec.*

THE MISSOURI VALLEY VETERINARY ASSOCIATION.

July 20, 1894, a large number of representative veterinarians of eastern Kansas and western Missouri met at the National Hotel, in Leavenworth, Kan., for the purpose of organizing themselves into an association for the elevation of the profession, the dissemination of professional ideas and the cultivation of fraternal feeling. That the need of such an association existed,

was evidenced by the numbers present, and the interest manifested.

The meeting was called to order at 7.30 P. M., Dr. Lemay, of Ft. Riley, being chosen temporary chairman, and S. L. Hunter, Fort Leavenworth, temporary secretary.

"The Missouri Valley Veterinary Association," was the name adopted after several ballots were taken.

Upon proceeding to the election of officers Dr. SESCO Stewart was elected president, Dr. R. H. Harrison, 1st vice-president, Dr. D. Lemay, 2d vice-president, and Dr. S. L. Hunter, secretary-treasurer.

The president appointed the following gentlemen censors: Drs. Ernst, Demay, McCurdy, Moore and Saunders.

The president, Dr. Barth and Dr. Sihler, were duly elected to draft constitution and by-laws.

The secretary was duly empowered to have printed application blanks for the use of our association. Several valuable and instructive papers were presented and read, among which were Dr. Wattlis', subject, "Don't be a Clam," and Dr. Stewart on "Duties and Opportunities of Veterinarians as Sanitarians, and its Relation to Human Medicine." Both papers were well prepared, and brought out a good discussion by the members.

It was decided to hold our next meeting in Kansas City, Mo., Oct. 3d, at 7.30 P. M. Adjourned.

S. L. HUNTER, V.S., *Sec.*

KANSAS CITY, MO., Oct. 3, 1894.

The regular meeting of the Missouri Valley Veterinary Association was held in Kansas City, Mo., on October 3, 1894. Meeting was called to order promptly at 7.30 P. M., with President Stewart in the chair. Upon calling the roll the following members responded: Drs. Atherton, Black, Bray, Harrison, Hunter, Moore, Saunders, Sihler, Stewart, and Wattles. Members absent: Drs. Lemay, McCurdy, Ernst, and Barth. There were present about thirty-five veterinarians, and a number of students of the Kansas City Veterinary College.

The minutes of the previous meeting were read, and on motion, duly seconded, were approved.

President Stewart delivered his opening address, which was full of most excellent points.

The secretary's report was read and approved.

Owing to the fact that Dr. Harrison was obliged to leave on an evening train, regular business was suspended to hear Dr. Harrison's paper, "Parturient Apoplexy in the Cow."

The discussion following Dr. Harrison's paper was excellent, and many valuable points brought out.

The Board of Censors reporting favorable on the following applications, they were duly elected to membership: Drs. John Bell, Wm. M. Bell, N. S. Mayo, A. C. Euart, F. W. Cook, John Forbes, G. T. Netherton, Dillard Ricketts, F. L. DeWolf, I. K. Atherton, L. M. Kluttz, and F. M. Linscott.

The Constitution and By-Laws were read by chairman, and after discussing the same were adopted without change.

Dr. Moore's paper on "A Practical Use of Guttapercha in Veterinary Dental Surgery," was then open for discussion.

Dr. Bray being obliged to be absent, his paper was read by the secretary. Also Dr. Bray exhibited a sample of the ticks obtained from southern cattle.

Our next meeting will be held in Atchison, Kan., when our numbers, no doubt, will be again augmented. We now have a membership of twenty-six, and as all manifest a great interest, you may expect to hear favorable reports from the Missouri Valley Veterinary Association in the future.

S. L. HUNSTER, V.S., *Sec.*

EXTRACTS FROM EXCHANGES.

STATE CATTLE KILLING.

Of the 20,500 cattle examined, the officers of the State Board of Health from January, 1893, to March, 1894, 959 had tuberculosis and were killed. Of these Orange County had 154, Dutches, 145, Delaware, 87, and Sullivan none. This is a

feather in the cap of Sullivan County, whose main industry, next to summer boarders, is supplying milk to the creameries at about two cents a quart. While the people of this state have no occasion to begrudge any expenses legitimately incurred in scientific examinations of this nature, it is, perhaps, an occasion for remark that this work cost \$9,025, while the state's outlay for the animals killed was \$18,309.

CONTAGIOUS DISEASES IN FRANCE.

In one of the reports on contagious diseases of animals in the Department of the Seine, are found some extracts dealing with hydrophobia, and some interesting details concerning other scourges, which are liable to be transmitted to man. Tuberculosis in cattle is the subject of a lengthy article, and the reporter has found traces of the disease in no less than seventy cow-houses in the department, but the proportion of infected animals is only 3.4 per 1,000, and he combats the commonly received opinion that direct infection through milk is a frequent cause of consumption in the human species. He recommends, however, a more stringent enforcement of the law relating to contagious diseases, and states that glanders in horses is becoming so prevalent as to render strong measures necessary. Finally, he insists on the importance of doing away with private slaughter-houses which abound in the suburban districts, as they furnish unscrupulous owners of diseased beasts with considerable facilities for disposing of them as sound.

FOR SALE.

A light Veteriuary Ambulace for sale. Cost \$225. Will sell for half price.
Address, E. S. MERRELL,
Middletown, N. Y.

AMERICAN VETERINARY REVIEW,

JANUARY, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

NEW YORK STATE VETERINARY COLLEGE.—We have been favored by the President of Cornell University with one of the first reports of this valuable institution, and take this opportunity to present him with our sincere thanks. The report is complete, and in its 90 pages presents a prosperous state of the University and showing a condition of growth and usefulness that few similar institutions in the country could boast of. For us, however, there is in the report a portion which fills but a small space in printing, but which is to occupy a more important one in a few short years, and that is the *New York State Veterinary College*. It is said that "the most important event in the record of the year was the passage by the Legislature of an act to establish a State Veterinary College at Cornell University," and, as we have reported in previous issues, \$50,000 have already been appropriated, and, no doubt, more will come from the same source, and will find proper employment.

Every member of the veterinary profession will welcome with pleasure the announcement that the results, so far obtained, are going to bear fruit at an early day. Work in building the necessary accommodations is going on, many of the departments are already filled, and some of the various chairs of the curriculum are occupied; matriculation is to be severe, attendance is to be closely watched, and, above all, the quality of the students is going to be the required condition—quantity will be the last consideration.

If, with all these promises, the attitude of the entire board of officers of the University is taken into consideration, and the resolutions which have been passed at their meeting in June are carried out, it is certain that we can look toward the early establishment of a true veterinary school in this continent. The first which will possess an official position before the people, and which we sincerely hope may prove worthy of the great State where it will be established—a child of the State which will always have and require the support, moral and material, of its mother.

ANOTHER VETERINARY COLLEGE.—From the slip cut out of the *Report*, a Californian paper, we received notice that the establishment of a new veterinary college was contemplated, under the name of the San Francisco College of Veterinary Surgeons. The notice, its reading, the booming which it contains, had a peculiar odor of self-admiration and of quackery, and we feared that a good object was going to be used for personal benefit.

Later on, however, our anxiety has been quieted by the official first circular, which has just reached us, of the California Veterinary College, in which we find the names of several gentlemen reported as millionaires and ready to back up the Board of Faculty, in which we find the names of four veterinarians, three of English and one of American graduation.

The requirements for graduation will be three years attendance and a term of NINE months, and we are informed by private notes just at hand is accepted and is a branch of the University of California.

And so on rolls the ball. Three-years' studies are now the order in respectable veterinary institutions. A step which soon will be accepted by all, and in which THE REVIEW takes pride for her successful efforts in behalf of the improvement of veterinary education. But there is another step which we have so far failed to notice, viz.: a change in the formation of Faculty, in the election to professorships. They ought to be granted only

by competition. Which of the schools will inaugurate it? In waiting for action in this great improvement, we send our greetings and best wishes to the new school of the West.

LE ROI EST MORT—VIVE LE ROI.—These words are the closing ones of a farewell address made by our worthy friend George Fleming, to its numerous readers, as editor of the *Veterinary Journal*.

In a long retrospective consideration of the work done by the *Journal*, taking it from its start when the integrity of the Veterinary Corporation in England being menaced by a peculiar action of one of the teaching schools it was found necessary to establish a publication which would be the organ of the profession, and following the work undertaken to our days, the ex-editor of the *Journal* concludes in saying that the task for which the *Journal* was originally established has been accomplished and then announces his retirement from the hard and difficult, though in many instances, pleasant work, to which he has given so much energy and so much of his talents and time since 1875.

With the modesty that has characterized the whole professional life of our old friend, he tells us that though he is "editorially dead, the *Journal* still lives, possessed of all the vitality and scientific spirit, and that under the direction of a much more competent, but perhaps not more enthusiastic editor, with more resources at command, it will continue its useful and independent career."

To George Fleming, creator and now ex-editor, we offer our collegial farewell, with our warmest wishes that he may for several years to come enjoy the happiness of seeing the *Journal* still receiving the support and the assistance of the English reading profession.

MORE ROOM INSIDE.—Another call for a complimentary notice has been made, and the same answer is given—a negative one, of course. What! is the trade dull? Are not the flourishing notices of sufficient attraction? Are the candidates

striking? Of course not, as long as your *prosperous institution* has commenced with a *good attitudane of students from all parts of the continent, the West Indian Islands, and even from Great Britain*; and in that case, why say "*Students can still enter*"? Is it the application of the railroad horse-car company's old motto, "Move forward, please; more room inside," with the pulling of the bell for railroading through.

ORIGINAL ARTICLES.

CONTRIBUTION TO THE STUDY OF SERUM-THERAPY IN DIPHTHERIA.*

By E. ROUX, M. D., Chief of Laboratory of the Pasteur Institute, and Drs. L. MARTIN and A. CHAILLOU, Internes of the Hospitals of Paris.

Serum-therapy is one of the most important questions of the day since the researches of Behring and Kitasato. Tetanic antitoxine was studied first, as being the easiest to obtain and because its preventive action is manifested with a marvellous potency. In practice it has not justified all our hopes, and everyone recognizes the fact that while always useful in tetanus, it is not an absolutely certain remedy. The reason for this is that we are only able to recognize tetanus when contractures occur, i. e., when general poisoning has already taken place. This, however, is no longer a fact in diphtheria, for, while it is also a toxic malady, the poisoning follows the presence of angina or laryngitis, and we are warned, by the presence of the false membranes, before the poisoning has become declared.

Since 1891 we have pursued a series of experiments in the treatment of diphtheria by the antitoxic serum, at first upon animals, and later on children. Before publishing anything on this subject, we determined to obtain a sufficient number of

* Read at the Congress of Hygiene at Buda-Pesth. Extract from the *N. Y. Therapeutic Review*.

facts to enable us to judge the method properly. Now we are enabled to declare that our results confirm, in all essential points, those that have been published by Behring and his collaborators.

1. *Preparation of the Diphtheritic Toxine*.—The animals which furnish the antitoxic serum are immunized against diphtheria, that is to say, they are accustomed to the diphtheritic toxine.

The toxine is produced by cultivating the virulent diphtheritic bacillus in broth, in the presence of air. Under usual conditions, the cultures must be maintained for a number of months at a temperature of 37c. (98.6 F.) in order to allow the poison to accumulate. A more rapid procedure has been recommended by Roux and Yersin; it consists in making the cultures in a current of damp air.

Flat-bottomed flasks are used, provided with a lateral tube (Fernbach's flasks), containing alkaline broth, peptonized at 2 per cent, so that the liquid layer will be of but slight thickness. After sterilization in the autoclave, they are impregnated with fresh and very virulent diphtheritic bacilli, and the incubator is heated to 37c. When the development has well begun, the bent tube of each flask is connected by means of a rubber tube with a pipe issuing from a copper tube which is itself connected with a water blast pump. By means of screw closers placed on the rubber tubes, the amount of air entering the neck of each flask may be regulated as it arrives after bubbling up through a washing jar. This arrangement is better than that which connects all the flasks together and supplies them all with air from the same current. After three weeks, or four at the most, the culture is sufficiently rich in toxine to be employed. At the bottom of the flasks we see a heavy deposit of bacilli, while the surface is covered with a veil formed by younger microbes. At this time the reaction is strongly alkaline.

All diphtheritic bacilli, even when they appear to be equally virulent for guinea-pigs, do not give the same amount of toxine in the cultures. A trial of bacilli from various sources will

show those that make the largest amount of toxine. No bacteriologist will be astonished to hear that the strength of the toxine is not always the same in cultures made, in all appearances, under identical conditions. Hence it is well to make a large provision of toxine before beginning a series of experiments, so that these may be thoroughly comparable one with another.

The finished cultures are filtered upon a Chamberlain tube and the clear fluid kept in well filled flasks, corked and kept in the dark at the ordinary temperature. Thus prepared, the toxine commonly kills a 500 grm. guinea-pig in 48 hours, with a dose of a tenth of a c.c. After a long time it loses its activity, but very slowly if kept in the manner indicated above.

11. *Immunization of Animals.*—Dr. Carl Frankel was the first who immunized guinea-pigs against diphtheria by carefully inoculating them by injection, with toxine that was modified by heating it to 70.c (158° F.) Then Behring recommended the mixture of toxine with trichloride of iodine. He now prefers to inject very small doses of pure toxine at sufficient intervals to allow the animals to remain healthy. Brieger and Wasserman obtain the result by injecting a culture of diphtheritic bacilli in thymus broth, after heating it to 65-70c. for a quarter of an hour. All these processes are successful, but it should be well understood that the thorough immunization of small animals, such as rabbits and guinea-pigs, is always a lengthy and delicate operation.

The method which we prefer is that which employs the iodized toxines used by Roux and Vaillard in their researches upon tetanus. Diphtheritic toxine combined with iodine is much less dangerous than pure toxine. Just before using the toxine we add one-third of its volume of Gram's solution, and then the mixture is injected under the skin. A medium sized rabbit can stand from the first half a cc. of this liquid; after a few days the injection is repeated and this is kept up for several weeks, after which we may increase the amount of iodized toxine or lessen the proportion of iodine. Later still pure

toxine will be given. The animals must be frequently weighed and the injections be interrupted if they lose weight, otherwise they get into a cachectic state which ends fatally. In these experiments we gain time by going slowly.

Dogs have furnished to some experimenters, among whom Bardach and Aronson, a very active serum. Sheep, especially goats, are very sensitive to the action of the diphtheritic poison.

The immunization of females which give a good deal of milk, such as goats and cows, presents a peculiar interest, since Ehrlich has shown us that the antitoxine passes in the milk. A milch cow, that is well immunized, is a source of antitoxine. Its milk is, of course, far less active than its serum, but the antitoxine which it contains may be condensed within a small volume, and hence is a good primary material for the preparation of antitoxine.

Of all animals capable of furnishing large amounts of anti-diphtheritic serum, the horse is the easiest to immunize. It bears the toxine much better than the other animals we have mentioned. We often see horses that have received from the first a dose of two to five c. c. of strong toxine, injected under the skin, and which present only an ephemeral febrile movement and a local œdema which rapidly disappears. The ass also bears the toxine well. If we admit, with Behring, that the serum of an animal is all the more antitoxic and he shows the greater sensitiveness to the toxine, the choice of the horse may appear as a bad one. But, since 1892, we began to immunize horses against diphtheria because, following the results obtained by Roux and Vaillard with tetanus, we knew that serum of horses is inoffensive for animals and for men, even when injected in large amounts. When injected under the skin it is immediately absorbed, and without local reaction. Moreover, nothing is easier than to take from the jugular vein of a horse, as frequently as it may be desired, and perfectly pure, large quantities of blood from which a perfectly limpid serum may be removed. We have some horses from whose jugulars, by

means of a large trocar, blood has been removed more than twenty times, the vein remaining as supple and as permeable as on the first day. Their immunizing power is in the neighborhood of 100,000 and it would be easy to increase it.

Our immunized horses are cab-horses from six to nine years old, who are feeding well, and have no organic disease, especially of the kidneys, and which have been discarded from work for injuries to their legs. First of all, it has been ascertained that they do not react to mallein, and hence are free from glanders.

In order to immunize our horses we inject gradually increasing doses, under the skin of the neck or back of the shoulders, of a toxine of a great activity and able to kill, in doses of 1-10 c. c. in 48 hours, a guinea-pig weighing 500 grammes. In two months and twenty days, one of our horses received more than 800 c. c. of toxine, without manifesting anything but a transitory local œdema and a rise of temperature of $1^{\circ}\text{C}.$, ($1\ 4\text{--}5^{\circ}\text{F}.$) on the evenings after he had received a copious injection.

On the same day that this horse was bled for the first time (87th day of the experiment), he bore an introduction in the jugular of 200 c. c. of diphtheritic toxine without being incommoded by it. In the evening he had a slight fever, but did not lose his appetite.

The serum so removed has a preventive power superior to 50,000, i. e., a guinea-pig proves resistant to an inoculation of a half a cc. of very recent and violent diphtheritic culture if, twelve hours before, he has received a quantity of this serum equal to the 1-5,000 part of his weight. A mixture of 1-10 cc. of this serum and one cc. of toxine does not cause local œdema in the guinea-pigs under whose skin it is injected.

The horse is therefore the best animal that can be employed in the preparation of the anti-diphtheritic serum. His indifference to the toxine of diphtheria spares the experimenter many difficulties that are experienced with more sensitive animals.

When the horses have been brought to a sufficient degree of

immunity, it is a question whether it is best to maintain this immunity by means of frequent subcutaneous injections of small amounts of toxine, or by the occasional introduction of larger amounts within their veins. The second process is the handiest, the toxine (300 to 500 cc.) is injected at the time the animal is bled, and he is allowed to rest for about twenty days, but it is less efficacious than the first. In experiments on the immunization of animals against tetanus, Vailliard and Roux found that the most active serum was obtained by multiplying small injections of toxine. The same is true in diphtheria. It would seem that the cells must be frequently excited in order to constantly secrete antitoxine.

III. *Anti-diphtheritic serum*.—When a certain amount of the serum of an animal, that has been immunized against diphtheria, is added to diphtheritic toxine, the latter becomes harmless. The mixture, made in proper proportion and injected to animals, causes them no trouble and does not even determine a local reaction. The toxine appears to be saturated. This action not only takes place *in vitro*, but also occurs within the body. An animal protected by a sufficient dose of serum will not be affected by doses of toxine that would prove mortal in other animals. The toxine may even be injected first, and the serum several hours later, and the animal will not die. Of course the amount of serum needed to save him will vary according to his weight, to the dose of toxine that has been given, and to the moment at which the intervention is decided upon. The serum is preservative and therapeutic, not only for the toxine, but also for the living poison. These properties, discovered by Behring, are the basis of the treatment, and are due to a special substance called antitoxine, whose nature is as much hidden to us as that of the toxine itself. These two substances possess common characters; they are altered by heat, precipitated by alcohol, and carried down by divers amorphous precipitates which may be produced in the liquids in which they are in solution. These peculiarities are common to nearly all the preventive or antitoxic substances which exist in the serum

of animals that have been immunized against various infectious diseases. The only thing that distinguishes one from another is the specific action of each upon a determined virus or poison.

The animals which receive the diphtheritic antitoxine become refractory to the disease in a very short time. The immunity is established at once, but it does not last, it disappears within a few days or weeks, according to the potency of the dose of the serum that has been administered. This temporary immunity is very different from that which is acquired by the slow process that we have described.

What action is exerted upon the toxine by the anti-diphtheritic serum? Are the two substances neutralized or do they exist side by side? If they are not saturated, why are the effects of the poison no longer manifested? It appears as if the toxine must be destroyed. But a mixture which gives no effects in a guinea-pig will still act in a rabbit, in which it produces a marked œdema of the tissues in which it is injected. The results will change with the mode of experimenting. We can only say that the anti-diphtheritic serum is not antitoxic in the true sense of the word; added to the toxine, it leaves it intact; injected in animals, it acts upon their cells, causing them to lose their sensitiveness to the poison. The proof of this is seen in the fact that an amount of serum which preserves an ordinary animal will fail to save one that has been weakened beforehand by injections of other microbes or microbic products. If the antitoxine destroyed the toxine, a given amount would be efficacious in all guinea-pigs of a given weight. The natural explanation of these facts must reside in the action of the serum upon the cells. The lively cells of a healthy animal respond to the stimulation of the serum, whereas in an animal that appears healthy, but who has been weakened previously by microbic injections, these cells are unable to protect.

The study of phagocytic reaction in diphtheria has been undertaken at the Pasteur Institute by Dr. Gabritchewski; the results he has obtained bear out the fact that preventive serums are stimulant rather than truly antitoxic.

The serum that we obtain from horses keeps very well, without alteration, for all manipulations are performed with the greatest possible cleanliness. It is kept in the dark, in sterilized flasks, to which nothing but a piece of melted camphor is added. The serum which is dried *in vacuo* can easily be sent at a distance, and reassumes its preventive qualities when dissolved in eight or ten volumes of sterilized water. This solution gives rise to a slightly transitory local swelling, which is never seen with the natural serum.

It may prove useful to condense an antitoxine which, as in milk, is too greatly diluted, but it appears to us to be a useless procedure to condense a serum which must again be diluted.

iv. Action of the Serum in the Diphtheria of Mucous Surfaces.—Most experiments in serum-therapy have been practiced on animals under whose skin the substances were injected. Behring and his co-laborers have mentioned several, however, in which the injections were practiced upon the mucous membranes. These are very interesting, since, in practice, we do not find that diphtheria is developed in the midst of the tissues, but upon the mucous surfaces of the throat and larynx. Hence we should cause a diphtheria of the mucous surfaces of animals, and see how it behaves under the action of the serum. This is the best way of preparing for the actual treatment of children.

It is very easy to give a vulvar or vaginal diphtheria to a female guinea-pig. The mucous surface of the vulva and the vaginal entrance may be scratched, as was done by Loeffler, or, better still, may be slightly cauterized with a heated glass rod. Then the diphtheritic germs are applied. In a few hours there is redness and swelling, and the œdematous mucous membrane becomes covered with a grayish, adherent false membrane. There is strong fever, a vaginal discharge, and in two or three days we see the evidences of general poisoning; the animal loses flesh and dies. This process has the advantage of showing the evolution of the local process, and the modifications brought about by treatment. This false membrane is of the

same nature as that observed in children, and contains diphtheritic and foreign bacteria.

1. *Serum injected preventatively.*—Female guinea-pigs always resist the action of the virus when a sufficient amount of the serum is injected prior to the vaginal inoculation. In proceeding in the manner already described, there always occurs a false membrane; but, while in the control cases there is a red and œdematous mucous membrane, with high fever, and a bad general state, the treated females show less extensive redness, less swelling, and a mild degree of fever. From the second day the local lesions diminish and the mucous membranes show a beginning reparative action. Females of the same weight were experimented on. Those that were unprotected died on the sixth day, while those which received a preventive inoculation equalling 1-10,000 part of their weight recovered. When the dose of serum is not sufficiently strong, the animals apparently recover, but succumb later on to cachexia. The same things occur if the serum is injected at the same time that the inoculation is made.

False membranes may also be produced on the ear of rabbits. A rubber ring is first placed around the ear, to cause a slight œdema. Then the skin is lightly burned and inoculated with diphtheritic bacilli. The rubber ring is then removed, and, as the exudation keeps the surface humid a fine false membrane is formed. By microscopic sections of such ear at various stages of the disease it is very easy to study the changes that occur in the tissues.

2. *Serum injected after inoculation.*—The false membrane is well developed after twelve hours, and the redness and swelling of the vulva are marked. If, at this time, an injection of serum of from a 10,000th to a 1,000th part of the weight of the animal is made, the animal will recover very well. A few hours after the œdema is arrested the swelling diminishes, and on the second day the false membranes become detached. When the mucous membrane is healed no more diphtheritic bacilli can be found.

One is astonished at the rapidity with which the false mem-

branes become detached and disappear, when these guinea-pigs are compared with control ones that die with extensive lesions of the vagina in five to six days.

3. *Action of the serum on animals whose tracheas are inoculated.*—Tracheal and laryngeal diphtheria is, in children, by far the most severe form. The bacillus often invades the lung, when the absorbing surface becomes enormous and the poisoning is very rapid. Besides, the respiratory difficulty may call for tracheotomy, in which the wound itself facilitates secondary pulmonary infection and increases the danger.

In order to properly judge what results we might obtain in actual practice, it was therefore necessary to experiment with animals whose trachea or larynx were involved.

Rabbits are best for this purpose. The trachea is incised, the mucous membrane scratched with a platinum needle and then inoculated with the needle charged with diphtheritic bacilli. The wound is then closed. On the morrow these animals have fever, in 48 hours the breathing is uneasy and noisy, as the false membranes keep developing; one can even perceive, at a distanced, a very characteristic noise.

Guinea-pigs so inoculated commonly die in three days when not treated. Rabbits die in from three to five days. In these animals the trachea and the larynx were injected and false membranes covered the mucous surfaces and often extended to the first ramifications of the bronchi. The lungs, congested in spots, showed a few bacilli.

When guinea-pigs or rabbits are thus inoculated, after having received an injection or preventive serum, they do not acquire diphtheria, or, at any rate, they show no manifestations of it. When the amount of serum is insufficient the disease stops for a time, and then there is a relapse. In some instances, after too small an injection, we have seen guinea-pigs go through a mild diphtheria and die two months later with lesions of the kidneys and the suprarenal capsules.

If the serum is injected after inoculation there is an arrest of the evolution of the diphtheria.

4. *The anti-diphtheritic serum in diphtherias complicated by the association of other bacteria.*—The diphtherias thus associated with or complicated by the presence of other bacteria, especially the streptococci, are among the most severe that are to be seen. Most frequently the disease involves the lungs, which, at autopsy, show foci of broncho-pneumonia, wherein are found the diphtheritic bacilli and the streptococci. Roux and Yersin have already shown that a virus of small virulence may become deadly for guinea-pigs when inoculated at the same time as a streptococcus not very virulent by itself. Is the anti-diphtheritic serum capable of curing these complicated cases? This constitutes a question of the greatest interest on account of the frequency of the existence of these mixed forms in children. Dr. Funk has investigated it, and finds that this simultaneous infection determines an increase in the production of the diphtheritic toxine, but that the presence of the streptococcus does not prevent in any way the neutralizing effects of the antitoxine. Hence, in these cases, we must simply inject larger amounts of antitoxine.

Funk inoculates under the skin; we inject in the trachea so as to imitate as closely as possible the actual conditions of practice. The bacilli and streptococci were inoculated in the manner mentioned above. The streptococci had been taken from a diphtheritic child, and were therefore one of those forms that are found in associated diphtherias. Isolated in a pure culture, it does not cloud broth and is not very virulent for rabbits. Two cc. of a recent culture in broth, injected in the veins of a rabbit, only kills him after ten days. One cc. introduced under the skin causes an erysipelatous sore, with transitory fever, and without serious disturbance of the health. The same amount placed in the trachea of a tracheotomized rabbit gives it a brief elevation of temperature without pronounced malaise. The diphtheritic bacillus added to it is the same virulent one that has served in our other experiments.

The association of these two microbes produces in rabbits a diphtheria running a rapid course, as seen in very young

children. The anatomo-pathological lesions are the same. In both cases there is broncho-pneumonia with abundant bronchial secretion.

In these cases of associated diphtheria the serum but rarely cures. This is not because there is a formation of larger amounts of diphtheritic toxins, or because the antitoxine action is hindered, but because the cells that are stricken by the poison of the streptococci no longer feel the stimulation of the antitoxine. In a number of other experiments the animals treated 12 hours after the inoculation invariably died, notwithstanding repeated injections of the serum. We frequently saved rabbits, treated seven or eight hours after, by repeated injections of serum. It is here important to repeat the injections in order to be assured of a definite cure.

Would we obtain better results in these associated cases by the simultaneous injection of anti-diphtheritic serum and the serum of rabbits immunized against erysipelas? Dr. Marchoux, of the Pasteur Institute, has supplied us with a serum of this sort which, however, has as yet failed to give us good results, though a rabbit inoculated with it outlived for several days a control rabbit. Perhaps this serum was not sufficiently efficacious against the sort of streptococcus that was employed.

NOTES UPON MALLEINE.

BY PROF. E. NOCARD, of Alfort.

These are the resume of many experiments made with my friend, Dr. Emile Roux, of the Pasteur Institute, which have been made upon over *nine thousand* horses with the malleine prepared at the Institute which above all qualities has the advantage of being always the same and identical to itself in its action.

This quality is due to its mode of preparation. We use, as unique seed or element (semence) a glanderous bacillus whose

virulency, through continued generations upon rabbits, has been brought to its maximum of intensity and keeps it; and since 1891 we have always kept this condition of glanders to the same degree of virulency; in using the pulp of the spleen of a rabbit that died 36 or 48 hours after an intra-venous injection, several tubes of potato cultures have been freely planted, and after three days of standing in a temperature of 37° the product of a culture is diluted simply in a little quantity of boiled water, filtrated on linen and injected into the vein of the ear of a rabbit whose spleen will serve to the planting of other potatoes and so on. These potato cultures are not used for the preparation of the malleine but only to the cultivation of a glanderous virus with a high and always even virulency.

To prepare malleine, we used cultures made on glycerined bouillon, according to the formula that we have given for the culture of the bacillus of tuberculosis. *

Veal or horse bouillon, common salt, $\frac{1}{2}\%$, peptone, 1%, glycerine, 5%.

Twenty-five to 30 bottles each of the capacity of 250 cubic centimeters and containing glycerined bouillon are planted at the same time, after a month of standing in the oven, the cultures are sterilized to the autoclave, then concentrated by evaporation in the water bath to the 10th of the first volum, then filtrated on Chiardin paper—thus is *brute malleine* obtained—that is a seripous liquid, of dark brown color, with aspeiral odor, somewhat viscous in aspect. Brute malleine containing 50% of glycerine can be kept a long time, almost forever, away from the light and heat. In practice we have used it diluted to the 10th or to the 8th with phenic water at 0.5% or better in boiled water—but in this case the solution must be used as soon as it is prepared.

1. In glanderous horses, the injection of the minimum quantity of malleine (one-fourth of one cubic centimeter of brute

* *Nocard's Rome*.—(Sur la culture du bacille de la tuberculose—Annales de l'Institut Pasteur, 25 Janvier, 1887. Page 27.)

malleine or two cubic centimeters in malleine diluted to the 8th) gives rise to a characteristic reaction.

In a few hours, at the seat of inspection, there appears an inflammatory tumefaction, warm, tense, very painful, always large, at times enormous, from the circumference of which start lymphatic sinuous tracts or cords, also warm and painful, extending to the surrounding lymphatic glands—when malleine is aseptic and the injection made aseptically, this tumour never suppurates, it increases for 24—36 hours and remains for several days, then it slowly diminishes, by degrees and disappears only towards the 8th or 10th day.

As the tumour appears, the general condition of the animal undergoes great changes; he becomes dull and heavy, the face is contracted, the look anxious, the hair dry and staring, the flank is stuck up, the respirations accelerated, the appetite is suppressed, often he has frequent tremblings of the olecranon or crural muscles, or even the trunk is taken with strong convulsive contractions; if the animal is made to move its miserable appearance, stupor and deep prostration are surprising, the most powerful, active or even dangerous is entirely changed, he is weak, and indifferent to all surroundings. These general phenomena constitute what in France we call the *organic reaction*, they are not always as severe, and though they may vary in severity they are never entirely wanted.

By opposition the *thermic reaction* is never absent. In a few hours the central temperature of the glanderous horse rises gradually from $1^{\circ}5$, 2° , $2^{\circ}5$ and even more above the normal. I have seen one case in which the hyperthermic brought on by the injection of malleine rose, after the 10th hour, 4 centigrade degrees (from $38^{\circ}2$ to $42^{\circ}2$).

The elevation of the temperature already visible from the 8th hour after the injections, lasts a long time; reaching its maximum between the 10th and 12th hour, at times even after the 15th and more rarely towards the 18th hour.

A fact important to notice is that the phenomena following in glanderous horses the injection of malleine lasts a long time;

after 24, 36 and 48 hours they still persist ; there is prostration and the temperature remains above normal of more than one degree.

2. In healthy horses, on the contrary, the injection of malleine, even in much larger quantity is without effect ; the temperature remains normal, the general condition is not modified, and at the point of injection there is only a small tumour, œdematous, slightly warm and little painful which instead of increasing, diminishes rapidly and completely disappears in less than 24 hours.

3. The reaction following the injection of malleine is altogether specific, when it exists it allows the rapid and certain affirmation of the existence of glanderous lesions, even the smallest ; when the reaction fails one can be certain that the animal experienced upon has no glanders, whatever may be the appearance of the suspect lesions, or the result obtained by the inoculation of their products. Ulceration of the pituitary membrane resembling chancres of glanders, purulent lymphangitis resembling so much farcinous cords, and even producing a suppurative orchitis in the guinea-pig, are in this way readily distinguished from glanderous lesions.

4. The use of malleine cannot give truly useful indications unless all possible causes of error are avoided :

(a) It would be imprudent to employ it in animals already feverish, the indications of the thermometer might be affected by it and bring on an erroneous conclusion.

(b) Animals submitted to the experiment must not be exposed to atmospheric variations (sun, fogs, rain, wind, etc.). If most of horses are more or less unaffected by the influence of these causes, some are not, and outside of other causes may by them exhibit variations of central temperature of $1^{\circ} 5$, 2° or even more. Serious errors might follow such experiments, specially if the indications of the thermometer were only taken in consideration.

(c) And lastly, one must not forget that some diseases, distemper for instance, are often accompanied with daily oscilla-

tions in the temperature of the patients. When cases of this kind are suspected, one must be certain that the hyperthermia following the injection of malleine is lasting, and that the organic reaction is also present.

5. It is seldom that a case of glanders remains isolated in a stable containing a certain number of horses; the rule is that other animals become affected in their turn. But, before presenting evident and visible signs of the disease which indicate the need of sanitary precautions for them, they may have already spread the germs of the disease and contaminated other animals.

Injections of malleine allow to ascertain that, in such a case, the number of animals really contaminated is always greater than one would suppose if depending only on the simple clinical examination.

If the animals thus condemned by the malleine are, all or only some of them destroyed, the examination of their lungs will always reveal lesions of glanders, at times in great number, or again limited and represented only by small rounded nodules, firm to the touch, of the size of a millet seed, yellowish or greyish in color, semi-transparent, homogemous in their entire thickness, without fibrous wall on their periphery, without caseous softening in their center; the glanderous origin of these *translucid tubercles* is no longer a doubt in our days.

But if, instead of destroying horses condemned by malleine, they are kept isolated, away from any chance of new contamination, only a small number of them will sooner or later exhibit the clinical signs of glanders; while the others will remain with all the appearance of health, will be returned to their work and none will become glanderous.

If, while they are kept isolated, these horses are periodically submitted to the test of glanders, the number of those that will react will gradually and at each test diminish in such a way that, after several months, most of the animals which had been condemned by the first inspection may be considered as healthy; they behave like those which had not reacted at the first test, they never present any symptoms of glanders, neither do they

contaminate others. One then can conclude that the glanderous lesions detected by the first injections have definitely *recovered* (healed).

How do these horses recover? Has malleine contributed to the recovery? In what limits?

At the present hour, it seems difficult to answer these questions in a satisfactory manner. It is possible, even probable, that malleine exerts a favorable action upon the regression and the definitive cicatrization of the glanderous lesions, when these are recent and of limited extent, but it is impossible to affirm it.

The severe individual isolation, the long and continued æration, good food were sufficient in days gone by to arrest in a few months the most dangerous epizootics, and then malleine could not be given the credit of a curative action. Neither do I believe that we are prepared to decide as to the part that malleine may have taken in the numerous cases of recovery of pulmonary glanders that we have to record to-day.

6. From all that precedes, it results that the systematic use of malleine constitutes the surest, the quickest and less expensive means to relieve the most seriously affected centers of glanders.

VETERINARY EDUCATION IN RELATION TO THE PRACTICE OF VETERINARY MEDICINE IN NEW YORK STATE.

BY PROF. LIAUTARD, M.D.V.M.

A paper presented to the New York State Veterinary Medical Society.

MR. PRESIDENT AND GENTLEMEN:—To be called at this moment before such an honorable gathering of members of the veterinary profession is an honor which, to me, comes to crown a period of thirty years engaged in behalf of the profession; and when I am asked to address you on the subject of veterinary education in relation to the practice of veterinary medicine, you can appreciate how I realize the compliment and yet how regretful I must be of what I consider my inability to do justice

to the subject. . . . I hope, therefore, that while you will accept my warm thanks for the honor devolved upon me you will also receive my remarks with indulgence and with the assurance that if I err in my conclusions it will be with the firm belief that I am speaking for what I consider a good cause.

The subject of legislative regulation of the practice of veterinary medicine in the state of New York is one of the natural consequences of the well-deserved reputation and past history of the state, namely that of being the *one* in the Union where higher education is the principal aim of her citizens. The *first* in almost everything, New York State has been the leader in witnessing the establishment of veterinary schools on comparatively solid foundations, even if those are the results of private undertakings: she was the *first* where, for higher standing of her veterinarians, her veterinary schools were seen to require a matriculation examination, and she was among the *first* in the endeavors which were made to obtain legislative action to regulate the practice of that branch of medicine. The first act in that direction being passed by the Legislature in Albany in 1884.

But these were only the first steps in the right direction. The profession has made great strides towards improvement since the day when the first veterinary school had opened her school in New York City in 1864; a daring step had been taken by the American Veterinary College when, in 1875, candidates to her degrees were requested to pass an examination before they could matriculate and enter her lecture-room, and though this examination continued to be made more severe and more difficult little by little, they were and are yet inadequate to the requirements and to the qualifications of the educated veterinarian.

In former days, as many of you may remember, and up to last year the requirements of our veterinary colleges (I speak of those in this state) were: an attendance of two courses of lectures; first, those were only short sessions of a Winter course of 4 to 4½ months; then a Spring session was added, making the course 6 months; then came the two-year course of 6 months each; and now we find in the American Veterinary

College a requirement of attendance at three winter sessions at 6 months each, which will be increased to 8 months in a short while.

This result has been reached by degrees as you see, and if we have arrived at this point, if among the successful veterinarians of this Excelsior State we can count many of the alumni of the schools from New York, if we can boast of the progress made by our profession, of the standing to which the veterinarian has reached, there is no doubt that it is due to the fact that our colleagues are possessed of higher education and are ambitious to increase their professional knowledge, reared in that direction as they were while at college, where they were admitted with more or less difficulty and already in possession of a self desire for more knowledge and a comprehension that *knowledge and education are inseparable*.

Does all this however mean that though we have so far advanced, we have reached the limit of our needs—our veterinarians are far better educated than they were some years ago—but does it mean that still higher education is unnecessary—or would be superfluous?

Evidently no, and I am quite certain that the days are not far off when in the United States, the standard of veterinary education will be that which has for years existed on the continent and lately established in England, viz., an obligatory attendance at college of four sessions of at least eight months each.

Of course this will have to be reached by slow progress—but with it, another condition will have imposed itself, viz., *higher education before matriculation*.

Like in my studentship time, an ordinary good, though special, education was only required and to-day a degree of bachelor of science or of arts is demanded by the French schools, the same will be demanded here; this in fact already exists. Several of the American Veterinary College Alumni had received the A.B. or B.S. before the D.V.S. was added to their names.

But how long has it taken for European schools to reach that point?

If Lyon and Alfort are a century old and if it is only at the end of those hundred years that such facts have been accomplished. Can it be expected that after an existence of only thirty years, we can accomplish it?

The progress that has so far been made, as results of *required improved education* are too evident for me to dwell upon.

The class of practitioners, of the young men who enter the profession now are far superior to those of years gone by; the work that has been accomplished by the members of the veterinary profession has spoken by its results—greater public consideration is now granted to the veterinarians of to-day as compared with that given to the old self-made practitioner; legislative bodies are listening to our claims and the Regents of the University of the State are devoting some of their valuable attention to the subject of veterinary education and the regulation of the practice of veterinary medicine in the State of New York. From all these we realize that we are coming close to the period I was alluding to a moment ago.

As you are aware, a bill was presented at the last legislature in relation to those important subjects.

Framed upon the medical bill now in force in the state, the bill recommended the creation of a board of veterinary examiners, specifications were presented as to the duties of that board, as to the qualifications of those who would be allowed to present themselves for examination before said board and also as primary requirement, were the essentials for matriculation and graduation from our veterinary colleges.

The principal object of the bill was higher education, and on that no one can object it—myself last of all—but as long as we are now speaking on this subject, I hope you will allow me a few remarks on some of the requirements of the bill.

The creation of a board of examiners is one that I cannot too strongly indorse. I have on previous occasions and in various papers pointed out the importance I attach to the existence

of such board, and if I erred in calling for a national board, overlooking as I did the difficulties that exist in the creation of such a body through the fact of state rights, I am perfectly satisfied to see the plan started to-day in each individual state; until the moment has come, when the importance of the veterinary profession will have been proved so powerfully as the guardian of our national agricultural wealth, the Federal government will then take hold of it in the proper way and make it one of its national institutions as it is in the old world.

The conditions of admission to examination before the State board form the most interesting part, however, of the bill to the future veterinarian and to the existing places of education.

Section 176 of the bill reads :

“The regents shall admit to examination any candidate who is more than twenty-one years of age, of good moral *character*, *has the general education required in all cases after July 1, 1896, preliminary to receiving a degree in veterinary medicine not less than three full years*, and has received a degree as veterinarian from *some registered veterinary school.*”

Those requirements read all that we have been asking for, in fact all that which imposes itself upon veterinarians and upon veterinary schools of repute that which must necessarily be carried out all through the country in a short time.

It means for us a perfect indorsement of our remarks and of our propositions made in Chicago before the members of the first veterinary congress of America held last year. It means all obligations for every one who shall intend to practice in *this state*, to obtain certificate of qualifications and of registration; it means no more imposition on the part of the easily obtained graduation from any school from any part of the world, it means death to quackery, it means the elevation of the veterinary profession on its proper pedestal.

And yet with all these great benefit obtained, with all these obligations which are going to make the veterinary profession of New York State what we are all wishing for; why do we have some objections to make?

The reason is simple, and though it may appear personal on

my part, I will not hesitate to mention it, feeling as I do, that no one here will accuse me of personal feeling when the subject of veterinary elevation is at stake.

Gentlemen, years ago, when I began the hard work of starting the first veterinary school opened in New York, I admitted to matriculation gentlemen who were earnest in their intentions, in their purposes, but whose education . . . Well, I will say nothing of this . . . some stayed with us, worked hard and succeeded; others, well they failed or retired to engage themselves in other more suitable business, and so it went until 1875.

I do not mean, however, to carry the impression that all the students at the New York school at that day were inferior in their education. Some of them have made their mark in the profession. Some of them are to-day among the foremost of our colleagues.

In 1875 the American Veterinary College opened its door, the matriculation requirements are carefully considered and imposed in 1877, when "*certificates of collegiate or academic education or a preliminary examination are demanded.*"

Of what did that preliminary examination consist of—it was not very severe you may believe—but yet it proved a benefit—better students came to us.

In 1885 the requirements at the American Veterinary College are made more stringent and better defined. "They demand a *good common school education, certified by college degree, or an examination on reading, writing and spelling.*"

In 1889 a still more severe test is demanded as the examination now will consist in "*an essay as test of handwriting, orthography, grammar and reading from a classical work.*"

In 1890 no change is made, but "*the better educated the candidate is, the better will it be for his further studies.*"

In 1894 the requirements are either a certificate or diploma of a college degree, or "certificate of an examination passed before a recognized college, or of having attended the highest class of a public school," or "an examination which will serve

as a test in *reading, handwriting, orthography, grammar and arithmetic.*"

Gentlemen, it has taken us twenty years to reach at this still low standard. We have progressed slowly, perhaps too slowly some will say. I will answer "yes, but surely."

It is well enough for some of our friends to say that the requirements demanded by the regents bill are certainly very low, and that after all, the examination on *arithmetic, elementary English, geography, spelling, United States history, English composition and physics* cannot be considered as too severe a test for a candidate to the study of the immense field of comparative medicine.

I will grant that "the better educated, the better fitted," but are our young men prepared for this sudden raise in the requirements. Many possess those qualifications no doubt, but how many do not. It may be proper to expect them from our city boys, but how about those who are in the country. It may not be difficult to find them among families well to do, but how about the ambitious boy, who has by hard work, I was almost going to say hard labor, learn some of the requirements that you ask, has economized to see his way through the three years of college life . . . and who finds the college doors closed for the present at least, for several years anyhow, until he becomes possessed of your new re-enforced obligations.

But let us suppose that we are in error—that the officers of the American Veterinary College have been wrong in working so carefully since their organization, and that the requirements of the bill of the regents should be the only one which would allow our veterinary schools to grant degrees to veterinarians who would establish themselves afterwards to the state. What would it mean? What would be the result?

Simply this: "*Private schools give up your charter and close your doors. Your existence of thirty years teaching, Gentlemen of the faculty, are no protection. Your ungrateful work, your years of perseverant activity, your sacrifices in behalf and for love of your profession must all be ignored. Your schools will remain*

empty, not because of your deficiency perhaps, but of the severe requirements for which our young men had no opportunity and no time to prepare and which *have chased them in the veterinary halls* of other states.

Do you believe, gentlemen, that I exaggerate. I have seen enough of this done in the past, and if it proves to be so when the requirements were so slowly, so gradually increased, what will it be when the new *regime* is re-enforced?

You may say that if the students from the state will go to graduate in other states, they will have at their return to submit to the requirements of the regents bill before they can practice.

This is true, but how do you know that they will return? and what will be said of New York, the "Excelsior" State, whose veterinarians would then become alumni from other schools, from graduates out of the State.

The Alumni Association of the American Veterinary College counts two hundred gentlemen out of her five hundred and thirty graduates, two hundred who are from New York State and New York City, and among which many are practicing in the state.

How many more hundred are likely to follow their example and yet, the life of our private schools, of those who were the nursery of the *American veterinary profession*, with their existence of hard and persistent devotion to her, a proud life as it is in fact, is threatened and her existence may be suddenly ended by a stroke of the pen of our Governor.

Gentlemen, no one in this building knows what the foundation and elevation of a place of instruction and specially of a veterinary school exacts of work, of restless nights, of patience, of sacrifices of all kinds. Some imagine that it is all smooth road, that all is needed is to organize, issue circular, open, go on . . . or close. But if any one entertains those ideas, let him be sure that it will take but a very short time to satisfy him of his error.

Our schools, as they have been since 1864, are private undertakings, their life, their improving curriculum, their success,

their existence have depended on the number of students which have come to them, they have not behind them the support of wealthy and well-known organizations—for these last one hundred students or no student, may seem alike—for the private schools, no student or a limited number mean an arrest in their work, a lack of life support, the closing of their doors.

And then what? Is our state prepared to receive the future students (from seventy-five to one hundred last year) who wait for admission to the school. Is there another veterinary institution which is ready to admit them, with the same facilities, same opportunities for theoretical or practical work.

If there is, then the regents are right. A school (I mean State school) with everything that is necessary, with perfect organization, is what is wanted in our large states. When once such State institutions exist, private undertakings will scarcely have right to existence, but until then, do not cripple the efforts of the schools of the day, which after all have done so well and against which you cannot even reproach their slow growth as long as you have not granted an *iota* to their help.

But here, Mr. President and gentlemen, I have occupied your attention quite long enough—I have endeavored to show you how a higher degree of education is necessary for our future candidates to veterinary degree, how with this desire in view the American Veterinary College has little by little reached the point where she is to-day; I have tried to show you what might, what will be the result of too sudden and severe requirements upon the existence of our private schools in the State, and which, in case of death, cannot be replaced *immediately*, and it is in the behalf and for the welfare of these mothers of American veterinary profession that I will close these remarks in recommending to the favorable consideration of the meeting the following conclusions, namely: That we endorse the passage of a bill recommending the establishment of a State Examining Veterinary Board, in *which* the requirements for matriculations to any of our State Veterinary Schools, besides those including degrees of academy, high school, etc., etc., shall be a certificate

from the Board of Registry of the University, based upon a graded scale in such a way that for the year 1895-96 the examination shall be on *English composition* (that is spelling, writing, reading, *Arithmetic and United States Geography*; for the year 1896-97, *English composition, arithmetic, geography, and United States History*; for the year 1897-98, *English composition, arithmetic, geography, United States History, and elementary physics*, and in which the condition of admission to examination of a graduate before said board shall be a degree from a veterinary school or veterinary department of a University having at least a *three-years course* of studies and *college attendance*.

TUBERCULOSIS.

BY PROF. E. P. NILES, D.V.S.

A paper read before the Virginia State Veterinary Medical Association.

(Continued from page 600 and concluded.)

All germs that cause disease do so by the poisonous products of their growth and multiplication within the system. In tuberculosis then, it is this chemical poison that causes the lesions, and the more rapidly this poison is formed the more marked will be the symptoms, and the sooner will the disease prove fatal. The system, as well as the milk of tuberculous animals, contains to a degree corresponding to the extent of the disease, a quantity of these toxalbumins, which when consumed with the flesh and the milk by tuberculous people, adds just so much more poison to the patient's system, thus converting what may be, in many instances, local tuberculosis, into a general form of the disease, and possibly cutting short the life of the individual a number of years. This theory is self evident when we stop to consider the manner in which Koch's lymph or tuberculin exerts its influence on tuberculous subjects when injected into the system.

The symptoms of tuberculosis are too well known to call for any discussion in this paper.

The treatment is of but little importance to us as veterinarians, as the only proper course to pursue is to destroy all animals as soon as found to be tuberculous. With the medical profession the matters must be viewed from a different standpoint, for in their patients treatment must be attempted.

Many remedies, both new and old, have been tried, but all have failed.

Dr. Yeo, of the King College, London, and others have great faith in the use of creosote by inhalation, and large doses by the rectum, claiming to have gotten good results when the treatment was applied in the early stages of the disease.

Drs. Bertin and Picq claim to have effected a cure in a limited number of cases by injecting goats milk when all classical treatment had failed. Prof. Liebreich, of Germany, claims to have successfully treated a few cases by the hypodermic use of cantharidate of potash.

Aristol in olive oil has been used hypodermically; its advocates claiming a certain degree of success. The so-called "Amic treatment," which at present is a secret, originated in Cincinnati, but from reports of local physicians has no curative effect. The *Modern Medicine and Bacteriological World* quotes an article from the *Pacific Record* in 1892, announcing a new chemical substance which Klebs prepares from Koch's tuberculin, and which he names tuberculocidin. It is nothing more nor less than tuberculin with its injurious elements eliminated, and at the same time retaining its curative properties. It causes no elevation of temperature when injected into the system. In fact it is claimed that large doses reduce the temperature. Out of a number of human subjects treated, Klebs claims to have cured 18.6 %, improved 60 %, no improvement 18.6 %, deaths 2.6 %. This is really a very good record, but as no further announcements have been made we may reasonably suppose that further experiments with this substance have not proved satisfactory.

When Koch announced his discovery of tuberculin in 1890, we were for a time led to believe that a cure for tuberculosis was at last at hand. Disappointment, however, was the result. In

experiments conducted with this substance a marked elevation of temperature was noticed when it was injected into the system of tuberculous subjects. In healthy subjects no elevation of temperature was noticed. In view of this fact tuberculin has been extensively used since 1891 as a diagnostic agent in the lower animals. For this purpose its value cannot be overestimated. The manner in which it acts as a diagnostic agent is an interesting one and demands a few moments of our time.

I have stated before that the system of tuberculous patients is charged with the toxalbumins of the germ of the disease. This product of the germ is nothing more nor less than tuberculin. The addition of a small amount of artificially prepared tuberculin to that already contained in the system causes a temporary fever, or reaction, in from six to twelve hours after the injection. The reaction varies from one to six degrees above the average normal temperature, and lasts from twelve to fourteen hours. In healthy subjects the quantity of tuberculin injected is so small that the animal is not affected by it. Reports are unanimous in support of this statement.

That this new method of detecting the disease in all of its stages is an extremely delicate and accurate one will be seen by the following experiments :

In April, 1893, tuberculin was used on the entire herd of cattle at the Experiment Station, with the result that only one animal gave the reaction. This animal was a thoroughbred Shorthorn cow in excellent flesh for beef, for which she would have been sold in another week, as she was worthless as a dairy cow. The elevation of temperature above the normal was 1.8° . A post-mortem examination revealed intestinal tuberculosis, with two large tubercles on the liver. In July, of the same year, by the request of Captain C. E. Vawter, of the Miller School, and with the assistance of Prof. Tinsley, I used tuberculin on the entire herd of milch cows belonging to the above mentioned school with the result that one cow gave a reaction of 4.2° . An autopsy in this case revealed intestinal and pulmonary tubercu-

losis. This cow was a high grade Jersey, and was in good milking condition, showing no outward signs of the disease. After the test was made on the college cattle a "scrub" milch cow was purchased and allowed to run with the other cattle on the farm. During the latter part of winter this cow suddenly died of acute tubercular pleuritis and pericarditis. To ascertain the result of bringing this diseased animal to a healthy herd, the tuberculin test was repeated on the entire herd of seventy-two head of cattle last June, with the result that six animals gave the reaction as follows :

Thoroughbred Holstein cow, three years old, reaction 2° .

Native cow, three years old, reaction 1.1° .

Thoroughbred Jersey cow, five years old, reaction 1.2° .

Thoroughbred Holstein bull, three years old, reaction 2.4° .

Thoroughbred Guernsey heifer, two years old, reaction 1° .

Thoroughbred Jersey bull calf, reaction 1.1° .

At this time the general condition of all of these cattle was good with the exception of the Holstein cow and bull. The bull had frequent attacks of diarrhœa and would not fatten with the best of care. The cow had recently calved and had not done well since.

As the reaction in all of these animals (except the bull, which had an abnormally low temperature before injection,) was slight, and all but one were thoroughbreds, it was thought best to separate them from the herd and make a second test. It may be stated in this connection that the temperatures of these animals, both before and after injection, were submitted to Dr. Salmon, of the Bureau of Animal Industry, and that he reported none at all suspicious except the Holstein bull. The animals were kept separate, however, and tested the second time a month later, with the result that the Holstein bull was the only one that gave any trace of a reaction; the elevation of temperature in his case being 1.3° . As a result of this test the animals were allowed to mingle with the balance of the herd until June 15th, when my attention was called to the Jersey cow

which had, since the test, lost flesh rapidly and developed an aggravating cough. Suspecting tuberculosis, she was at once destroyed and an autopsy held which revealed pulmonary and intestinal tuberculosis with enlargement of the lymphatic glands of the mesentary. In fact this was one of the worst cases of tuberculosis that I have had an opportunity to examine after death.

On June 22d, the bull and native cow which showed a reaction of only 1.1° on the first test, and none on the second, were also destroyed. The autopsy on both of these animals revealed intestinal tuberculosis with enlargement of the internal lymphatics. The three remaining animals have not yet been slaughtered, but are isolated and will be tested with tuberculin later in the fall, and if they show the slightest reaction they will be slaughtered at that time.

The question as to what elevation of temperature constitutes a reaction is at the present time an open one. I have seen no cases reported where the animal was condemned with a reaction of only one degree unless the general symptoms were prominent enough to make a diagnosis possible by a physical examination.

Dr. Conrow, in a communication to the *Veterinary Magazine*, January, 1894, reports the destruction of one case that showed the physical signs of tuberculosis, and with tuberculin gave a reaction of 1.4° , but upon holding a post-mortem no tubercles were found. Dr. Conrow does not state whether or not a careful examination of the bones and *all* other tissues of the body was made. If such an examination had been made it is more than probable that tuberculosis in some one of its many hiding places would have been found.

From my own experience I am led to believe that any elevation of temperature, that continues over two or more readings, above the highest normal variation during a period of twelve hours before injection is diagnostic of tuberculosis, and that if we expect to completely eradicate the disease from our herds we must take this as a standard. It would be much more profitable

to occasionally destroy a healthy animal than to let one that is diseased escape, even though we expect to repeat the test in six months time.

The following conclusions may be drawn from the various reports on the use of tuberculin:

First.—That tuberculin is of no value as a curative agent; since in both man and beast, whether injected hypodermically or taken into the system with tuberculous milk and meat, it converts latent into acute tuberculosis.

Second.—That as a diagnostic agent in the lower animals it is exceedingly delicate and almost invariably accurate in the hands of experts.

Third.—That the method of its use as published by the Bureau of Animal Industry is more accurate than any other method yet in use.

Fourth.—That the system acquires a certain tolerance to the action of tuberculin after the first injection; thereby making a second test unreliable without the intervention of several months.

The laws necessary to control the disease in the lower animals and lessen the mortality in man may be briefly stated as follows:

First.—The most important of all, the establishment of a state board of health, one member of which shall be a qualified veterinarian.

Second.—The appointment of a qualified state veterinarian, who shall be an *ex-officio* member of the state board of health, and work under its direction.

Third.—A liberal appropriation placed at the disposal of these officers in order that they may effectually carry out their work.

Fourth.—The establishment of public abattoirs, and compelling the slaughter of all animals for meat at these places.

Fifth.—Providing for veterinary inspection of all animals slaughtered for meat. Also veterinary inspection of all public dairies.

Sixth.—The provision of some means to compensate owners of all condemned animals.

Seventh.—A law empowering the state veterinarian to order the destruction of all condemned animals.

Eighth.—The provision of county hospitals for indigent tuberculous people.

Ninth.—Compulsory disinfection of all premises that have been occupied by tuberculous people or animals.

Tenth.—Compelling the disposal of the carcasses of all tuberculous animals by cremation.

Eleventh.—Prohibiting tuberculous people from attending public gatherings in closed buildings.

Twelfth.—Prohibiting the inter-marriage of tuberculous people.

With these laws in force tuberculosis can be practically stamped out.

Science is arrayed for the battle; all that is lacking is the declaration of war on the parts of the states and government.

THE INFLUENCE OF CLIMATE AND OTHER ENVIRONMENTS ON THE DISTRIBUTION AND CHARACTER OF DISEASE.

BY PROF. W. L. WILLIAMS, V.S., Montana.

A paper read before the United States Veterinary Medical Association.

(Continued from page 617.—Concluded.)

Its distribution among horses in enzoötic form so far as we can learn, appears to coincide geographically with actinomycosis of cattle, a fact to which Dr. Reynolds has already drawn attention. A relationship has been suggested on account of their like distribution.

They bear other minor resemblances at times, and we occasionally see in poll-evil or fistulous withers large indurated swellings with small oft-recurring abscesses, pursuing a very chronic persistent course.

In cases there appear, too, a well marked tendency to disease of osseous tissue, not typical of ordinary caries. In two cases without symptoms of caries I have seen in cases of poll-evil antero-posterior perforation of occipital protuberance with discharge of pus from the poll-evil escaping through this bony channel on the forehead.

On the whole, poll-evil and fistulous withers in enzoötic form like actinomycosis seem to be diseases of prairie localities and do not affect timbered regions. Of all states east of the Mississippi River, Illinois, the chief prairie state, seems the only one in which the prevalence of this disease cannot be accounted for satisfactorily on the traumatism theory. Dr. J. S. Butler, of Minneapolis, draws attention to a notable fact that in his region—as is the case in Illinois—the disease is rare in cities in comparison to the number of cases occurring on farms. Were traumatisms the sole cause such should not be the case.

While many veterinarians of the west and northwest adhere to the general view that this disease has its sole cause in traumatism, they admit its much greater prevalence and enzoötic character, and quite a number in whose views I concur fully are thoroughly convinced that traumatisms do not cause a large percentage of the cases seen in the area where the disease is most common. Among these are Drs. Dinwiddie, Arkansas; Lemay, Kansas; Stewart, Kansas, and T. J. Turner, Missouri.

Periodic or Specific Ophthalmia offers some very interesting facts in its geographical distribution. It seems common in the British Islands and continental Europe although not so prevalent as in parts of the United States. In our country the disease occurs frequently in the New England and Atlantic States, due largely to importation from the Mississippi Valley. It appears to arise frequently in the Allegheny Mountains, and is reported common in Maine by Dr. Choate, and in Massachusetts by Dr. Paige.

Along the coast it seems to disappear almost wholly, except as an imported disease, so Drs. Pearson, Peters, Kilbourne and

others report it very rare, although other practitioners report a more frequent occurrence.

In Alabama, Dr. Cary reports the affection frequent and acute, but in general the disease seems not very common in the South.

The disease occurs most frequently in the states bordering upon the Ohio River and upon the Mississippi River above its junction with the Ohio, reaching its greatest prevalence in the United States and probably in the world in Illinois, Iowa and Missouri. In more northerly states it tends to disappear so that Dr. Lyford, of Minneapolis, sees it largely in imported horses.

As the high semi-arid country east of the Rocky Mountains is approached, the disease becomes far more rare and less dangerous, yielding readily in most cases to care and treatment. So in Nebraska and North Dakota, Drs. Stewart and Hinebauch report it very rare and mild.

Reaching a still greater altitude with less rainfall and humidity the disease vanishes as we approach the Rocky Mountains to reappear again at a few of the lower altitudes along the Pacific Coast.

This disease has no known parallel in geographical distribution. It vanishes wholly in those regions where tuberculosis and tetanus cease to exist but prevails to its greatest extent in regions where the latter are comparatively rare, and in turn it becomes rare where tuberculosis and tetanus prevail most frequently and severely.

The etiology has been explained by some teachers and writers apparently to their entire satisfaction. I was taught that it was largely hereditary and that the shining example of this was to be found in the progeny of the famous blind sire Lexington, and so in my early practice I frequently found the cause in a remote infusion of Lexington blood, attributing to other causes, the more frequent appearance of the disease in draft stock, not related to Lexington. In the Rocky Mountain region we find as much of the Lexington blood comparatively as anywhere, the original breeding stock having been derived very largely

from Kentucky, and bands of thoroughbreds are found, almost any animal of which, may be traced back to the illustrious blind horse, yet I have not seen a horse in the Rocky Mountains affected with periodic opthalmia except newly imported animals and these recover promptly unless very far advanced and remain permanently free from the disease. My observations in this region have been brief and limited, but are in full accord with the more extensive experience of Drs. Knowles, Montana; Waugh, California, Arizona, New Mexico and old Mexico; Turner, Fort Niobrara, Neb., and other veterinarians and stock owners of this region. In fact I have been unable to learn of a single case of this disease arising in the entire Rocky Mountain region, whereas were heredity a sufficient etiological factor in the causation of the disease in this entire region, where carelessness in breeding reaches its highest point, should be thoroughly over-run with this affection.

Inbreeding is mentioned too as a fertile cause, yet in the large bands of wild horses in this region colts grow up in the bands, are left uncastrated and mate promiscuously with parent or offspring without producing evil results in this respect.

Close ill-ventilated stables, especially dark stables, are also cited as fruitful causes, but in the northern Rocky Mountains, where low temperatures prevail, stables are very dark and unsanitary, yet the few horses kept in them are free from the disease.

Others attribute the disease to the ill-effects of bright sunlight, especially to snow-glare in the winter season, but this disease is more of a summer affection, and does not occur so largely in winter in any district so far as observed, and were snow-glare an important factor the Rocky Mountains should be the chief habitude of this disease, since the snow-glare of this region is far beyond that of the states where the disease prevails.

No one living in the Mississippi valley or eastward can begin to appreciate the intensity of the snow-glare as seen at high altitude in the Rocky Mountains, with its dry, calm atmosphere and excessively low temperature during winter.

Others attribute the disease to food, and since it reaches its highest prevalence in the chief corn-producing states, maize is largely held responsible for its prevalence. There is good reason for believing this food to be an important factor in its cause, but not in itself sufficient to bring it about, or at least it falls far short of being a chief or essential cause.

The disease is not uncommon in many regions in this country where corn is rarely fed, and appears frequently in England and continental Europe where corn is not fed at all.

Neither is corn fed along the low Pacific Coast, where the disease prevails. It is hard to determine under these conditions if food can ever suffice to produce the disease, or if the great prevalence of the disease in the chief maize territory is a mere coincident.

That temperature and more especially altitude and humidity exert a powerful influence upon the occurrence of this disease there can be no doubt.

Dr. Clements, Baltimore, Md., suggests yet another element in the causation of this disease worthy of careful consideration, and in order that I may give you his views clearly, I quote his words. "There is an affection from casual observation identical with specific ophthalmia, but which is infectious beyond doubt, and which attacks horses without history of what we call specific ophthalmia—sudden attack of conjunctivitis, followed in a few hours with acute iritis and pus in the anterior chamber. Disease amenable to treatment by rest, counter-irritation and atropia injections. If not attended to, apt to be followed by adhesion of iris to lens and sometimes cataract. Either this is different from specific ophthalmia, or we are all wrong in description of latter disease—I am inclined to latter belief."

Dr. T. J. Turner, Missouri, gives a description of the disease essentially identical with that quoted from Dr. Clement, and I have noted in several cases in Illinois the same symptoms, course and termination. I would add also that on several occasions on farms where the disease had not before occurred, and in families where prior history had been wholly clean in respect to this dis-

ease and where the most careful examination failed to discover any cause in or even change of food, housing or care in any way whatever, that the disease would suddenly appear in several animals in a very virulent form, running an exceedingly acute course, terminating frequently in blindness at the first attack. In this way I have seen four or five animals out of a band of seven or eight horses on one farm all previously sound and without hereditary taint, suddenly attacked with virulent ophthalmia ending in permanent blindness, the disease then vanishing, leaving the sound animals perfectly well. In these cases all parts of the eye appear inflamed, tense and painful, the conjunctivæ hyperæmic, the cornea opaque and the anterior chamber filled with lymph, pus or blood. Dr. Clement's suggestion of infection in these cases is certainly worthy of careful consideration, as it may possibly explain them, which cannot be satisfactorily done by the theories advanced heretofore.

To say the least, our accepted ideas as to the etiology of periodic ophthalmia need revision.

NEW REMEDIES IN VETERINARY MEDICINE.

BY T. W. TURNER, D.V.S., New York City, N. Y.

A paper read before the Veterinary Medical Association of the County of New York

Since December last, when I had the honor of reading before the German Veterinary Medical Association of New York and Vicinity a paper on "New Remedies," published at the time in the *Journal of Comparative Medicine*, the busy world of science has not been at a standstill, for its motto is that of the celebrated Galileo—*E pur si muove*—(and still it moves) and is constantly plunging forward into the larger spaces of light and knowledge. And though not many new therapeutical agents have been added to the actual list, our laboratories are filled with the hopes and promises of the future, and the anticipations of another year will be doubtless realized in the discovery of some new and valuable additions to our pharmacopœia, that will go far towards assuag-

ing the many ills to which animal flesh is heir. In consequence of the intense activity which has characterized the lines of inquiry in this domain, and the many tests to which new combinations must be subjected, as far as their full therapeutical value can be established, the student is compelled to move slowly and insist rather on fullness of detail than multiplicity of outlines, and hence we must confine ourselves to the considerations of but a few remedies at a time.

Acetanilide.—Prepared by a prolonged interaction of pure aniline and glacial acetic acid at a high temperature. It is one of the most simple synthetical compounds of the “new remedy” era. When pure it forms lustrous rhombic tables, colorless and odorless, with a peculiar greasy feel and slight burning taste. It requires 200 parts of cold, 18 parts of hot water, and $31\frac{1}{2}$ parts of alcohol to make a neutral solution. Under the copyrighted name of antifebrin, acetanilide was introduced into medicine in 1887 as an antipyretic. Its principal employment has been in the treatment of neuralgia and rheumatism. As an antipyretic in phthisis and other pulmonary affections, in typhus and fevers generally it has been largely replaced by remedies of more recent date. The dose of pure acetanilide is from one to three drachms for a horse. Owing to its cheapness it is used extensively in veterinary medicine, and no ill after-effects have been noticed in its employment as an antipyretic. For external application it is not to be recommended.

Antikamnia is a preparation which was introduced by an American firm as a substitute for morphine, and as an antipyretic and analgesic. It is manufactured as a fine white powder, and gives evidence of its non-homogeneity when examined under the microscope. Several analyses of antikamnia have been published. They all agree in finding the chief constituents to be acetanilide with bi-carbonate of soda, some also discovered caffeine, tartaric acid and other ingredients.

Antipyrine.—Although a very widely known remedy, and also a fairly staple body, it may not be known that it is more or less decomposed or thrown out of solutions, by a number of

other chemical compounds, a fact which is of considerable importance to bear in mind in dealing with mixtures of which it forms an ingredient. From the long list of drugs and preparations found to be incompatible with antipyrine, the following are the most important: Tannic and hydrocynic acid, chloral, tincture, decoction and extract of cinchona bark, all iron salts in solution, bi-carbonate of soda, salicylate of soda, tinctures containing tannin, iron or quinine, and tincture of iodine. It may be mentioned that the latest observations as to the action of antipyrine have led to the expression of the opinion by several authorities that it has a marked, and in some instances, a dangerous action on the heart, producing lowering of blood pressure, malaise and collapse. To the utterance of warnings to this effect must be ascribed the fact that antipyrine, which was almost used as a specific against influenza during the earlier epidemics, was almost abandoned during the later ones. Against the copious perspirations which frequently accompany the action of antipyrine, either atropia or belladonna are given with advantage, either together with the remedy or shortly before.

Paraldehyde.—A product of the condensation of three molecules of ordinary ethyl aldehyde. Paraldehyde was introduced into medicine about 1884, as a hypnotic and sedative. Physiologically it is characterized by the absence of action on the heart. It has a strong reducing effect upon the blood, like all the aldehydes, and this influence precedes the narcotic action. Paraldehyde was specially recommended as a substitute for chloral where this remedy was contraindicated or did not produce satisfactory results. It is a clear, colorless liquid, having a characteristic ethereal odor, and a burning and afterwards refrigerant taste. Soluble in water 1 to 10. The dose for a horse is one to two fluid ounces. It may also be used subcutaneously, but there is seldom need to resort to this mode of administration, as it is promptly absorbed from the stomach.

Phenacetine.—A crystalline compound closely allied in chemical constitution to acetanilide and methacetine. It is prepared

by the action of ethyl-iodide on sodium paranitrophenol, which forms nitrophenetol, the latter yields by prolonged boiling with glacial acetic acid-phenacetine. It is described as appearing colorless, tasteless, inodorous, scaly glistening crystals, sparingly soluble in cold, more freely in boiling water, and in about 1 to 16 of alcohol. Phenacetine was introduced in 1887, and was recommended as an antefebriile, since which time its literature has attained large dimensions. It has been given in phthisis, typhus, polyarthritides; peritonitis with success, and has also made a reputation as an antineuralgic in vasomotor neurosis in the lancinating pains of neuralgia and hemicrania. Success followed its use in the whooping cough of children and in epidemic influenza both as a prophylactic and remedy. The action of phenacetine seems to be free from the danger of producing collapse and unpleasant effects generally; like most of the synthetic antipyretics its antefebriile effects are accompanied by more or less profuse perspiration. When fever is accompanied by restlessness or sleeplessness, phenacetine has been found to reduce the high temperature and produce quiet sleep without being followed by headache.

The soluble forms of iron.—The use of iron in medicine dates from the earliest times; indeed, so remote is the period when man first began to appreciate its virtues as a medicine that it is no longer possible to exactly define it. Probably the first form in which it was taken was not as a metal or as salts, but in some mineral spring which bubbled up from an unseen source richly stocked with super-carbonate of iron dissolved from some ferruginous strata through which the water passed. What may be distinctly termed the scientific use of iron in the treatment of disease, dated from the discovery of that element as a constant constituent of healthy blood, the conclusion being inevitable that it served some important purpose there, and that, consequently, its diminution might be the cause of disease. So it came about that iron grew to be regarded as a hæmatic, or as a medicament that specially acted upon and enriched the blood. All conditions of the body which were characterised by an ap-

parent poorness of the vital fluid were looked upon as calling for the administration of iron. The intelligent employment of the metal advanced another step when it was discovered in the domain of physiology, that the activity of the blood corpuscles as oxygen-carriers was dependent upon the presence of iron. It was found that the formation of new blood was also closely associated with the presence of this metal, so far at least as the abundance of red corpuscles was concerned, and that, what may be called the repair of the blood after severe hæmorrhage, was greatly facilitated by supplying an abundance of iron. A secondary question was naturally thus: In what form ought iron to be administered? It forms two classes of salts, distinguished in earlier times as per- and proto-salts, and to-day by the adjectives ferric and ferrous. The various oxides, ferrous, ferric and ferrous-ferric played an important part, their activity being, of course, due to the solution of some proportion of the dose administered in the acid juices of the stomach. In later times various ferric and ferrous salts, oxides and hydrates, were used in medicine, as well as the metal itself in the finely-divided state known as reduced iron. There were, however, a number of disadvantages associated with their prolonged administration, as was found to be the case in certain anæmic and chlorotic conditions. Among the soluble forms of iron the dialysed solution of the oxychloride was free from many unpleasant properties of most ferric preparations, but then its therapeutical activity was largely questioned by those who, regarding gastric absorption as partly dependent on a process of osmosis, asked how any liquid could be absorbed from which every constituent has been removed which was affected by the laws of osmosis. A more intimate study of the chemistry of the blood indicated that its contained iron was in the form of organic compounds of great complexity, and the idea suggested itself that it would be more rational to administer the remedy already in combination with some readily decomposable organic acidulous radical, than as an inorganic and very stable salts, which must be split up in the organism before the natural compound can be formed. As

a consequence, there originated such preparations as, the malate, citrate and lactate of iron. Most of these combinations are markedly less astringent than the inorganic salts, more pleasant to take, and presumably more readily borne and assimilated by the digestive organs. Even these preparations, though very great improvements on the earlier soluble forms of iron, did not come up to the requirements of a progressive therapy, and experiments were continuously being carried on with the view of discovering combinations of iron which, without possessing any of the disagreeable properties of the older galenicals, should exceed them in therapeutical activity and usefulness. The first step toward achieving this object, in the direction of preparing what may be termed natural compounds of iron was taken in 1877—by preparing a soluble albuminate of iron, *i. e.*, decomposing a clear solution of albumen with ferric sulphate, a precipitate was obtained which, freshly prepared, dissolved in a slight excess of caustic alkali. The solution, however, was possible only when a certain proportion was maintained between the iron salt and albumen. When such a clear alkaline solution was dialysed, sulphuric acid and excess of alkali were entirely removed, and the solution was unaffected in its medicinal virtues by the addition of alkali, alcohol or excess of acid. As this preparation and the iron salts generally are very largely prescribed for anæmia and other consequencea of a deficient nutrient supply, it may be interesting to inquire a little more into the nature of the morbid condition. Besides ordinary anæmia or chlorosis, there is a distinct variety of idiopathic anæmia, the essential pathological feature of which is a destruction of blood, and the most constant anatomical sign of which is the presence of an excess of iron in the liver, where the seat of the disintegration of blood corpuscles is in the portal circulation, and the destruction is believed to be affected by certain poisonous agents, probably of ptomainic nature, absorbed from the intestinal tract. The action of iron under these conditions has been closely investigated by numbers of physiologists and pathologists. Some have believed that the number of corpuscles increased under the

chalybeate treatment, while others have maintained that a very important factor in the beneficial result was an improvement in the quality of the corpuscles, that is in their richness in hæmoglobin, with little effect upon the number, which sometimes actually diminished. Later observation has shown that the effect produced depends mainly upon the different dosage of iron employed.

THE VALUE OF PROPHYLACTIC TREATMENT IN ANTHRAX.

BY JOHN FAUST, V.S., Poughkeepsie, N. Y.

For twenty-nine years, to my personal knowledge, splenic apoplexia and splenic fever have occurred every year up to 1886, in a streak of swampy land about two miles long, and Mr. Noxon, one of the sufferers, says he lost \$30,000 worth of cattle in that period. All imaginable diseases were suspected by professionals and non-professionals. I held post-mortems year after year, and always found one and the same thing—splenic fever or apoplexia.

In the year 1885, the suspicion of poisoning was so strong that Mr. Noxon wanted a chemical analysis made of the stomach. As I know that would have been money spent for nothing, I proposed that Professor Liautard make a post-mortem examination. After the post-mortem he stated to the owner that the whole cause was splenic fever.

A great many medicines were used with no effect. I advocated to the owners the vaccination with anthrax virus. I even went so far as to offer to do it for nothing if it was a failure.

The following is a history of the different herds that came under my care in 1886:

On July 3d, was called to see a cow belonging to Mr. Hoppe; she died before I reached her. The second cow was found dead in the lot. On July 10th was called to the third cow and put her under treatment for splenic fever (my record does not show what treatment). In twelve hours to all appearances she was well, but in ten hours more she died and post-mortem examin-

ation proved it to be splenic fever. The spleen weighed eight and one half pounds.

Mr. Hoppe's neighbor also lost his only cow. They were the only cows those men owned.

On July 17th, I was called to Mr. E. Lyon's farm. Ten days previous to my call, he lost one Jersey cow. On July 16th, the second cow was taken sick to which Dr. Thompson was called and diagnosed it as dysentery. The cow died shortly after he left. On July 17th, two more cows died without warning or medical care. The same day I found nine sick cows. My diagnosis was splenic fever. I was not prepared for any treatment that night. On the 18th, I made a post-mortem on cows that died on the 17th, and found them to have had typical cases of splenic fever. I then separated the sick from the well.

The following is the symptoms and treatment of this herd:

RECORD.

July 18th, 10:30 A. M.,	No. 1,	temperature	107°, very restless all night.
" " " " "	2,	"	108°.
" " " " "	3,	"	106°.
" " " " "	4,	"	103½°, restless. Died at 5 P.M.
" " " " "	5,	"	107½°.
" " " " "	6,	"	101¾", sinking. Died at 7 P.M.
" " " " "	7,	"	105¾", breathing very hard.
" " " " "	8,	"	108°.
" " " " "	9,	"	104½°.

The treatment in all these cases was fluid extract eucalyptus glob, ½ ounce doses, and arsenicum album 1-100 3 drachm doses, alternating every two hours.

July 19th, 10:30 A. M.,	No. 1,	temperature	104¾°, restless all night.
" " " " "	2,	"	106½°.
" " " " "	3,	"	103°.
" " " " "	5,	"	106⅓°.
" " " " "	7,	"	102", breathing almost normal.
" " " " "	8,	"	105°.
" " " " "	9,	"	101⅓°.

The same treatment continued, they all eat, drink and ruminated some.

July 20th, 12 M., No. 1,	temperature	101°,	very little restlessness.
" " " " 2,	"	102½°,	very drowsy and stiff.
" " " " 3,	"	101°.	
" " " " 5,	"	102⅓°.	
" " " " 7,	"	101¼°,	breathing normal.
" " " " 8,	"	100¾°.	
" " " " 9,	"	101°.	

Continued same treatment every three hours.

July 31st, 3:30 P.M. Temperature of all the cows was normal. They all eat and drink well and have a fair flow of milk. No medicine.

On July 25th, I inoculated nine cows and one calf with Chauvean's virus received from Professor Liautard. The following is the method of vaccination.

Clip the hair on inside of thin part of the ear. Make a small incision with a sharp-pointed bistoury. Clean off the small quantity of blood and inject with hypodermic syringe two drops of the virus.

On July 26th, cow No 3, had a very alarming high temperature: At 11:30 A.M., temperature 107°, and at 7 P.M., temperature 108°. All the rest of the cows had a slight rise in temperature. On July 27th, cow No. 3's temperature was 102½°, and to all appearances well.

The ears of all the cows, where the inoculation was made, swelled to more or less extent.

The following is a history of the herd of cattle owned by the Hudson River State Hospital. On the 27th of March, 1887, I was called to make post-mortem examination on a young cow which had died the night previous. *Results*: On removing skin, the tissues appeared to be filled with dark hæmorrhagic spots, the spleen very much enlarged, and of a very dark color; the abdomen contained a quantity of dark serum; the kidneys were dark and ecchymosed. The statement was made by Dr. Cleveland that they had lost from ten to twelve head every year at different periods in the same manner for a number of years.

I proposed the vaccination of the entire herd with Chauveau's virus, to which the doctors of the hospital agreed, on the 31st day of March I vaccinated the entire herd of forty-four head.

The following is the table of temperatures after vaccination:

No.	Tempera- ture before Injection.	Temperature after Injection.				
	Mar. 31.	Apr. 1.	Apr. 2.	Apr. 3.	Apr. 4.	Apr. 5.
1	102	102	103	102	101 1/2	101
2	100	102 1/4	102	101 1/2	102	100 3/4
3	100	101 1/2	103 1/4	102	101 1/2	101
4	100 1/2	101	102	102	101	100 1/2
5	100 1/2	105 1/2	104	103	102 1/2	100
6	100 3/4	102 1/4	103	104 1/2	102 1/2	101
7	100	102	102 3/4	104 1/2	105	101 3/4
8	100	101	101	101	102	101
9	100	101	102 1/2	101 1/2	101	101
10	100	101 1/4	102 1/2	102	100 3/4	100
11	99 1/2	100 3/4	102	101 1/4	101	101
12	100	101 1/2	103 1/4	103 1/2	102	101 1/2
13	100 1/2	102	102	101 1/4	101 1/4	101
14	100	100 3/4	102	101	101	100 1/2
15	100 1/4	102 1/4	104	103	101 1/2	101
16	101	102	102 1/2	101	101	101 1/2
17	100 1/2	102	104	100 3/4	100 1/4	100
18	100 3/4	102	104 3/4	101 1/4	101	101
19	100	101 3/4	105	107	104 1/2	101
20	101	102	102 1/4	101 1/4	99 3/4	100
21	100	101 3/4	102 1/2	100 1/4	100 3/4	100
22	101	103	104	103	101	101
23	100 1/4	102	102 1/2	99 1/2	100 1/2	100
24	100	100 1/4	102	99 1/4	Chill.	
25	100	102 1/2	103	100 1/4	105	101
26	100 1/2	102 1/4	103	101 1/4	100	100 1/2
27	101	103 3/4	103 1/4	103	100 1/2	100
28	100 1/2	101	102	101 1/4	100 1/4	101
29	99 1/4	101 1/2	102	100	101	101
30	100	101	102	101 1/2	101	100 1/2
31	100	101 1/2	102	101 1/4	99 1/2	100
32	100 1/2	102 1/4	102	100	101 1/4	101
33	100	103 3/4	102	103	101	100 1/2
34	101 1/2	103	100 3/4	102	102 1/2	100 3/4
35	100 1/4	102 3/4	102	101	103	101
36	100	102 1/2	103	100 1/2	100	100 1/4
37	100 3/4	103	102	101	100 1/2	100 1/2
38	101	102 1/2	104	102 1/2	100	100 1/2
39	101 1/4	103	102 1/2	101	101	100
40	100 1/2	103	101 3/4	100	101 1/2	101
41	101 1/2	104	102	101	101	101 1/2
42	101	103	102 1/2	101 3/4	100 1/2	100 3/4
43	100	103 1/2	105	103	100 3/4	101
44	100 1/2	102	104	102	101 1/2	100 1/4
					100 3/4	100 1/2

Ear swollen very badly.

Of these vaccinated, two died after a lapse of four years and four months of splenic apoplexia, fortunately in a place where no cattle have been kept since.

I also vaccinated the herd of Mrs. Wiley, consisting of thirty-three head, and Mr. J. Rose's herd of sixteen head. There was no table of temperatures kept of these two herds.

Since 1887, there has been but two cases of splenic apoplexia (the two of the Hudson River State Hospital) in the whole district.

Every year for over thirty years this disease has claimed its victims.

This is certainly very gratifying for the use of prophylactic treatment of this disease.

SOME EXPERIMENTAL RESEARCHES ON THE USE OF MALLEINE.

By PROF. A. LIAUTARD, M.D., V.M.

A paper presented to the Congress of Hygiene at Buda-Pest.

MR. PRESIDENT.—When several weeks ago, you did me the honor to ask me to present before the Congress in Buda-Pest some remarks upon the use of malleine in the diagnosis of glanders, I understood that your principal desire was to obtain documents upon the uses and results obtained by those among us, American practitioners, who, acquainted with all that has been written and said, proved and discussed in Europe, would have by special observations obtained facts which might throw some light on the numerous questions yet in doubt.

It is with that object in view that I send you these few pages, which, though concise, may, I hope, find near you as well much indulgence as I desire them to be interesting.

The great discovery of our Russian colleagues was known in America in 1892 by a few among us, and at the annual anniversary meeting of the United States Veterinary Medical Asso-

ciation, Prof. F. L. Kilborne, of Washington, D. C., called the attention of the Society to the report of numerous experiments which had been made by him under the direction of the Bureau of Animal Industry at Washington, a complete rendering of which was published in extenso in the AMERICAN VETERINARY REVIEW, vol. 16, page 437 and followings.

It was to be hoped that the publicity given to the report of Prof. Kilborne would have for its result the awakening among our confreres of America of a great desire to use malleine. The results obtained by him at the experimental station had been so much in accord with those published in European journals, the advantages that one might derive from its uses were so manifest, the facility with which it could be obtained (the Bureau of Animal Industry having offered to deliver it free of charge to all applicants), all these reasons were more than sufficient to justify the belief that many among us would in the future consider malleine as a weapon, indispensable to the armory of the veterinarian. But, must I acknowledge it! I believe there is nothing of the kind—and, with few exceptions, malleine has not yet entered into the practical domaine of our veterinary medicine—differing much in that respect from tuberculine, which, from the fact of the enormous quantity of tuberculous cows found in our private dairies, has been in such demand for the last few months.

In making such a statement, I must say that I believe myself justified, because, having in hand a quantity of imported malleine, and having offered it gratuitously to my confreres here, my offer remained entirely ignored; and, again, because our veterinary journals have contained but very little report on the subject which would be of any value, and if there are records made they may be published in those of the Bureau of Animal Industry, of which I am not aware. *

With this brief history relating to the use of malleine in the

* Since this was written, an article by Prof. Harger, of Philadelphia, was published in the *Veterinary Magazine*.

United States, I found myself much embarrassed as to how and where to find the material necessary to my paper. To keep my engagement, however, I beg to ask your permission to present you with the history of several cases which are personal to myself and the medical staff of the American Veterinary Hospital and to offer you the conclusions I derived from them.

Among the questions that may be presented upon the use of malleine, taking in consideration all that has been written on the subject, and carefully weighing the successes and the failures obtained with it, and also the new questions and problems yet unsolved which have been brought forward of late, and especially in France after the experiments of Montoire, and in the discussion before the Societe Centrale de Medecine Veterinaire of Paris, among all these questions we believe that the following are the most important :

1st. What is the action of malleine when injected in healthy animals, in decided glanderous or suspected animals, or in those affected with other diseases ?

2d. Is malleine infallible when used in doubtful or suspicious animals ?

3d. Does malleine possess curative properties ?

4th. Several samples* of malleine being given (American, German and French), which seemed to keep its qualities the longest time ?

5th. At what hour after the injection is the reaction the most marked ?

A glance thrown upon the tables adjoining the observations that I have made and recorded, will, I hope, be a sufficient explanation of the conclusions to which those experiments have brought me, and with which I will try to bring my mite in the solutions of the problems which are still obscure.

I. (a.) *Malleine upon healthy animals*.—Our observations upon the effects of malleine injected into animals in perfect health do not differ from those obtained by our European confreres. Used by us as experiments, the results have always been the same—no elevation of temperature, no general consti-

tutional changes ; in other words, no local or general reaction.

(b.) *Malleine upon diseased individuals, but not glanderous or suspicious.*—I have injected malleine into animals affected with diseases entirely different from that for which it is indicated, and with what result? In almost all, the same upon which Prof. Nocard has so well called the attention of the veterinary world, viz., a negative result, without any reaction. It is thus that in a case of suppuration of the sinuses, with necrosis of the palate (obs. 3), in a case of chronic suppurative synovitis of the hock (obs. 6) ; one of maxillary adenitis with lymphangitis of the face (obs. 12), a cold abscess of the shoulder with suppurative synovitis (obs. 18), and in a case of extensive suppurative lymphangitis of the left hind leg (obs. 32), in these five cases there has not been any general reaction nor any rise in the temperature. If in Observation 32 there has been some general reaction, it has been so irregular and so analogous to that existing during the whole sickness, that it can scarcely be considered as pathognomonic and belonging to the effect of malleine.

There are, however, two cases which are of some importance, I believe, because they may have a tendency to prove that, after all, malleine might react in other diseases besides glanders.

Observation 8 was obtained upon an animal which was to be used for dissections, and upon which there was no indication of glanders. He received malleine,—he reacted,—and at the post-mortem the only lesions found was a small pulmonary abscess of the size of a large apple upon the anterior lobe of each lung ; of glanders, nothing.

Observation 35, made upon a horse condemned on account of a suppurative pneumonia of fifteen days' existence, in showing an elevation of temperature of $24-5^{\circ}$ F., joints the preceeding as an exception to the rule.

From these two observations, and the fact that malleine is also so demonstrative in cases of pulmonary glanders, is it

improper to suspect a certain coincidence tending to show that malleine has a certain power in all affections whose principal seat is the respiratory apparatus, the lungs?

(c) *Malleine in glanderous, suspicious or doubtful animals.*—The action of malleine in all the cases where we have used it, either in those of a positive nature and of easy and sure diagnosis, or, on the contrary, in those that could be classified among the suspicious or the doubtful, has always answered to us in an affirmative manner, allowing us in our observations to recognize some 50% among the animals experimented upon and which, without the test, would have been returned to their work to continue their nefarious work, instead of going to the knacker's yard, where they belonged.

2. *Is Malleine always Infallible?*—Since our reading of all the experiments and records of malleine, since we had become familiarized with the published results, and especially since the day we experimented ourselves, we were pleased to consider in malleine a weapon sure and positive, which had been given to us to assist in the diagnosis of a doubtful and uncertain animal. The history of observation 33 came, however, to destroy, partly, for a certain time, our belief. This horse, whose symptoms had all the time been almost without importance in the point of view of glanders, though they were not altogether ignored, came and offered us a reaction of $33-5^{\circ}\text{F}$ in temperature, and besides local effects of little doubtful nature. But from that moment, the symptoms which were somewhat suspicious began to improve and then disappeared. A second injection was then made ten days later; the reaction was not entirely positive, but remained doubtful. A third injection, a week later, a fourth three weeks after, remained negative. The horse is apparently in perfect health, and whether Malleine has not told the truth, or

3. *Has she brought on the recovery of pulmonary glanders, yet in its incipient stage?*—Whatever it may be, the horse has returned to his work, which is not light, as he belongs to a traveling circus and is still in perfect health. Was his case similar to those mentioned by Prof. Nocard in his answer to the

critics of Mr. Leblanc? I regret that I did not destroy him, as I would have done with the permission of the owner. Perhaps I would have found at the post-mortem another solution to this important problem. However, this question of the possible curability of glanders by malleic effects is not so new; what is missing is the evidence that can only be obtained by observation and the autopsies of reputed recovered animals carefully traced afterwards in their existence.

4. *Malleine*, being a peculiar preparation from the culture of the virus of glanders, like turberculine and pneumo-basilline, are obtained from the cultures of the tuberculous and peripneumonic viruses, *must have the same qualities*, in whatever aspect it is found. And whether as brute malleine of Roux, it is syrupous in aspect, of a dark-brown color, or like that of the Bureau of animal industry, it is delivered in solution, and then appears more aqueous and of a lighter dark coloration; or, again, that it be like the one of Mr. J. Trautweiler, veterinarian, of Newark, who gave me two samples of German malleine, both of a very pale citrine color and almost like water (those are the three preparations that I experimented with), no matter what the physical character may be, the reactive effects must be the same.

That the injection be made with 1, $2\frac{1}{2}$, or 5 cubic centimeters, according to the indications of those who have prepared it, no matter; the reaction will always appear to tell the story, and, if the effects are absent, when the malleine has been used in a case of glanders, is it not because the malleine has lost its qualities? Therefore, the quality of the malleine is of a certain importance, and its age must not be neglected no more than its physical qualities.

Let us see. In August, 1892, I received from the laboratory of Dr. Roux, some brute malleine, and began to use it. I had been informed then that probably after two months it would have lost its properties. Observations 1, 2, 3, 4, 5, 6, 7, 8, 14, were the results obtained with it—used in solution, $2\frac{1}{2}$ c.c. at a dose. Observation 14 is made with it in April, 1893—that is eight

months after its arrival in this country.* In Observation 20 the malleine does not seem so pure, there is a slight deposit. I use it, however, in confirmation of an experiment made with German malleine, and of this Roux malleine I inject 15 drops brute, not diluted. The result of this experiment was an elevation of temperature almost equivalent to that obtained with the German malleine. *A year had elapsed since I received it*, and its properties were the same.

I made with German malleine, with Dr. Trautweiler, several observations. For some are injected $2\frac{1}{2}$, for others 5 c.c. My colleague knew nothing of these samples, of their preparations, or of their strength; he had received them from Germany, I believe, and we used them.

It is thus, that in Observations 16, 19, 20, 21, 22 and 23 we injected $2\frac{1}{2}$ c.c., and in Observations 17, 18, 24, 5 c.c. The results presented nothing particular. As I write this report, it is a year since I received that malleine, and it has yet the same aspect—clear, slightly citrine, and limpid. Has it the same qualities? I propose to test it at the earliest opportunity.

The malleine that I have obtained from the Bureau of animal industry at Washington has been tested in Observations 9, 10, 11, 12, 13, 23, 24, 25, 26, 27, 28, 29, 30. Like the precedings, this preparation has given me excellent results. The last sample I received December 10, 1893; on January 22, 1894, it had lost its limpidity; had become thick. That was probably due to the mode of preparation, another sample received the same day is yet clear and possesses the same qualities.

However, without being desirous to decide in favor of Roux malleine and grant it a superiority to that of other origin, I think in all justice I must acknowledge that its satisfaction and the results obtained by its use induce me to have a certain preference for it.

* Since this paper was written we have learned that the malleine prepared by Dr. Roux and Prof. Nocard can be kept for any infinite length of time, under special condition, and that it remain always the same.

50. It being admitted that malleine in cases of glanders gives rise to an elevation of temperature, an interesting and even important question is to know *after what lapse of time, at what hour does this elevation manifest itself?* It is a question important to the practical point of view. As it is necessary to the observation to properly register the temperature at a certain hour, is there a time, a given moment, when the changes in the temperature will begin to be manifested.

In the *Clinica Vétérinaria* of June, 1894, appeared an article showing that this has been the subject of numerous observations. Allow me to add some data obtained from my personal observations. They are resumed as follows: In one case the rise in temperature was noticed on the 4th hour after the injection of malleine, in four after the 10th, in one after the 11th, in five after the 12th, in one after the 13th, in nine after the 14th—in one single case it only began towards the 24th, and reached its maximum towards the 35th hour.

All these observations give an average of the time of the highest temperature between the 10th and the 14th hour, beginning before the 10th and extending to the 14th.

From these it seems to me that the regulation of the temperature is much simplified. The injection being made in the evening, say between 10 and 11 o'clock, the first temperature being registered in the following morning, say from 7 to 8 A. M., will allow us to follow the rising of the thermometer every two hours until the expiration of the 16th hour, say until 2 o'clock in the afternoon, which is generally the beginning of the dropping of the temperature.

In conclusion, allow me to call your attention upon a peculiar point presented by observation 29. This horse, certainly gland-erous by a first injection of malleine given on the 12th of April, received on May the 17th $2\frac{1}{2}$ cubic centimeters of Roux tuberculine, and twelve hours later gave a reaction of more than 4 degrees, with manifestations of local reaction such as malleine had never given before.

Nocard tells us that "Tuberculine remains without effect on

glanderous horses." In this observation the reaction with tuberculine was far superior to two injections of malleine of different origin, and the post-mortem confirmed their effects by the presence of extensive lesions of glanders in the lungs.

Such, gentlemen, is the result of my observations with malleine; they are very incomplete, it is true, but, nevertheless, I hope that they may prove for you of some interest, and that they may be of some value. Since the first days when it was admitted in the domain of veterinary pathology I have closely watched the literature on the subject, and patiently followed the numerous writings published upon it, I have experimented in the limit of my professional resources, and as much as I could, and it is with faith in the results obtained that, with Mr. Nocard, I can say that I have the strong conviction that, as in Europe, a day will come when malleine shall be admitted in the daily practice of the veterinarians of the new World as it has with our colleagues of Europe, and that here, as over there, it will render such services and be of such value that no veterinarian will remain indifferent to its use.

(To be Continued.)

REPORTS OF CASES.

A COMPLICATED CASE—DISTOKIA—CALCULUS OF THE RUMEN.

BY G. T. GOUBEAUD, D.V.S., Brooklyn, N. Y.

The following is the report of a rather unique case which occurred during the course of the writer's practice. I have never heard or read of one like it, and therefore think it of interest to the members of the veterinary profession. I will relate an incident in the same case which may throw some light upon the succeeding condition of the patient. On the 16th of June I was called to see a case of difficult parturition in a valuable Jersey cow, the property of Mr. L., living in one of the suburbs of the city. He had attempted to deliver her himself and failed, saying the head was turned and that he could not straighten it. He

also stated that she was in labor for about ten hours. I called and found the presentation almost as he had described it to me. The neck was flexed downward and backward between the fore legs in the direction of the fœtus. The chin touched the floor of the fœtal abdomen. The owner had tried to deliver the fœtus in this position, as he had already failed in trying to obtain the normal presentation. The fœtus was wedged into the pelvic cavity so tightly and so firmly that it seemed an utter impossibility to force the fœtus back. With extreme force the fœtus was at last forced back and the normal position obtained, after which parturition took place with but little difficulty. Being fatigued I did not remove the placenta, and I told the owner not to interfere with it, as it would pass in a short time. He called on the third day afterward and said the placenta was as he termed it, rotten. He said he became anxious after I had left, because in two hours the placenta was not expelled, and he had given her in all $\frac{3}{4}$ i of Extract Ergot Fl. I called and found the exposed portion of placenta undergoing putrefactive changes. After considerable labor the os was dilated and the placenta removed. The patient would not eat and appeared weak and exhausted. I left instructions as to injecting antiseptics into uterus, as a foul odor emanated from the vagina, also gave instructions as to feeding with gruel, milk, eggs and whiskey. I left and heard no more of her until the 28th of August, when the owner came into my office and rather surprised me by saying that his cow had a hole in her belly on left side and that food was coming out of it and dropping on the ground. Had noticed for a week or so a slight swelling on side with black spot in centre, but on account of its trifling appearance paid no attention to it. I called that afternoon and found her in a recumbent position, lying on her left side and ruminating. The owner called her, she assumed the standing position, walked over to him and ate an apple out of his hand.

Following is the History.—Patient was sickly after I removed placenta, would not eat or drink, had to be fed on gruel, eggs and milk for two weeks afterward, after which she began to

thrive, and has done well up to time of present trouble. On morning of day I saw her she milked eight quarts. The regular yield was about twenty-two quarts. Temperature 101° , respiration 20° , pulse 50. She looked the picture of health. Upon the left hypochondriacal region, low down there was a slight elevation of skin becoming more elevated towards the centre, about six inches in width. Except towards the centre it was firm, hard, unyielding and fibrous-like. The skin and underlying structures seemed to be intimately adhered to each other. In the centre of this elevation there was a patch of skin denude of hair, about three inches in width, having almost the exact appearance of a sitfast, which is so common upon the backs of horses; dry, leathery-like centre; black, gradually shading towards the edges to a dark brown purple and greenish tints of a slightly gangrenous odor. This discolored skin was detached from the normal skin for about an inch and a half, this left an opening through which escaped fluid—solid food, both of which had the characteristic odor of the contents of the normal rumen. After removing the detached portion of the slough, about two quarts of liquid and solid food escaped. I now introduced my two fingers into the opening and found a hard, solid, firm, unyielding fibrous-like ring almost circular, about an inch and a half thick. I now removed a small stone and about a tablespoonful of sand or clay. I forced my fingers up a little further and could feel the mucus membrane lining the rumen and some food. After dislodging the food and withdrawing my fingers, about two quarts of fluid escaped through the opening. I introduced my fingers again and felt what I supposed to be and afterwards found to be two small fibrous bands around the circular opening, uniting the rumen to the floor of the abdomen, forming a true gastric fistula. Not wishing to force the whole of my hand into the opening for fear of doing damage, I removed whatever particles of food I could with my fingers. After washing the opening and surrounding parts antiseptically, I attempted to close the opening up. The patient was cast and turned on her back. I now removed the entire slough and surrounding un-

healthy skin. For the suture I used six strands of the strongest waxed silk I had; the interrupted sutures was used. In some places it was utterly impossible to force the needle through. It was necessary to cut holes with a fine pointed bistoury. After the opening had been sutured the animal was allowed to assume the standing position, which she did after making several unefectual efforts. From the struggling to stand up in the hay and also in trying to assume the standing position, it caused all but three of the sutures to either break or pull through. I naturally felt disappointed at this mishap, but more so, for as the animal walked a few steps a small portion of the rumen and a loop of intestine passed through the opening. I cast the animal again and used the quill sutures. I forced back the protruding portion of the rumen and loop of intestine. The rumen and floor of the abdomen were sutured separately, as nearly all of the adhesions were now broken. I sutured the rumen with the cat-gut sutures; the uninterrupted suture was used. I am afraid the suturing of the rumen was more in name than reality, as it was fast becoming dark and I could hardly see. After suturing the abdominal walls as firmly and as securely as I possibly could, the animal was allowed to stand. Each abdominal suture was from two to three inches from the edges of the wound. A smaller suture was used to bring the edges of the wound together, thus making it almost impossible for the abdominal sutures to break. The wound was dressed with carbolic, a large pad of oakum applied over it and the abdomen enveloped tightly in a hand circular bandage. The patient was rather irritable and restless, so I gave her $\frac{5}{4}$ of Tinct. Opii. I stood her in a small stall, giving her as little freedom as possible, after which I left. She was seen the next afternoon. The bandage was soaked by the discharge; the oakum was saturated with it, as was also the surrounding skin. It possessed quite a characteristic gangrenous odor. The discharge had a sero-sanguinous color and oozed from the edges of the wound and from the holes caused by the suture. Skin looked black and blue in patches and small septic abscesses were beginning to form. The sutures were beginning

to pull through, six or seven had already pulled through. The wound in general looked extremely unhealthy; animal irritable, restless and anxious-looking. Temperature 105° , respirations 38° , pulse 80. A very unfavorable prognosis was now given and the owner advised to destroy the animal, to which he unwillingly consented.

Post-mortem.—It was becoming dark as I began the post-mortem. The character of the abdominal opening has already been described, so I will not repeat it. It had a general gangrenous appearance. The abdominal opening was torn through in places. On the floor of the abdomen, surrounding the opening, were fibrous bands uniting it with the rumen. The majority of these were now broken, which no doubt was done by the animal struggling to stand and from the forced position it was compelled to assume. The peritoneum was also adhered to rumen and floor of abdomen. These adhesions were not numerous nor well marked, except towards the opening. The rumen had a hole in it corresponding to the abdominal opening, but much larger and had healed over to nearly same size of abdominal opening. The rumen surrounding the opening seemed to be congested and had gangrenous spots on it. It was now quite dark, so much so that it was impossible to see what any of the viscera looked like. I sewed up the wound that I had made and left to call next morning to make a thorough post-mortem, but had the œdema buried.

GLANDERS—MALLEINE.

By J. S. LAMKIN, D.V.S., Yonkers, N. Y.

The following, as my first trial in the use of this valuable ingredient, may prove interesting to my colleagues and induce them to employ it oftener :

The horse had been working on a grocer's wagon for six weeks previous to my attention being called to it and mingling with his five other horses. He was considered to have a "catarrhal trouble," in fact, a certificate to that effect by a veteri-

arian in New York accompanied the animal at time of purchase. There had been during this time quite a copious discharge of offensive mucopurulent matter generally, when most abundant, of a light yellow color and only slightly viscid. Both submaxillary glands somewhat enlarged and tender; no cough at any time and only one slight hæmorrhage from the nostrils; animal strong, hearty, and doing his work well. Temperature for a day previous to the inoculation stood at about $100\ 1-2^{\circ}$. The malleine was introduced into the side of the neck at 10.30 P. M. The following morning there was general uneasiness, lack of appetite and anxiety, along with a working of the jaws and lips, as if the mouth and throat were dry. Temperature at 7 A. M. $103\ 1-2$. The local inflammation was considerable, a swelling having formed at point of inoculation of the size of a man's fist, which grew during the day to the size of a goose egg, and extended up and down the side of the neck some few inches. The temperature rose to $104\ 1-5^{\circ}$ at 9.30 A. M., reacting 105 at 2 P. M. when I ceased taking it. The animal was permitted to live for two days longer when I destroyed him and made a hurried examination of the head and lungs. Although no ulcers could at any time be seen through the nostrils, previous to the inoculation small ones were *beginning* to form low enough down to be seen at time of death, and the whole general glanderous condition of the animal appeared to have been much aggravated by the introduction of the malleine. The turbinated bones, rather the mucous membrane covering them, was black and covered with ulcers, and the upper portion of the nasal septum also contained a number. Throughout the lungs were hard nodules with occasionally one breaking down or cascated. I much regretted having to stop here, but I had no more time to spare.

BIBLIOGRAPHY.

Advanced Agriculture. By Henry J. Webb, Ph.D., B.Sc. Longmans, Green & Co., London and New York.

Works of this nature are not common in English literature, and when one is offered presenting, as "Advanced Agriculture" does, material of interest for veterinarians, it must be received by them with pleasure and read with interest. The days are fast going away when, especially in America, the education of veterinary students was satisfied to have in the curriculum of his alma mater merely lectures on the various principal branches of veterinary medicine. They now look for something else; they began to appreciate the link which united them to agricultural knowledge, and if they do not expect to obtain it as extensively as the students of agricultural colleges do, they need some of it. Their education of veterinarians obliges them to know something of the general principles of agriculture.

Truly it is, perhaps, more to the students of agricultural colleges that the book of Dr. Webb is intended for, but part first, on "Agricultural Science" proper, and certainly part second, on "Agricultural Practice," present to the veterinarians subjects of great interest.

In this last part, Chapter vii, treats of live stock; it gives the breeds of horses, of cattle, of sheep, of swine, and even of poultry and fowls, etc.; the management of these animals; some interesting points in relation to their breeding, general cares, etc., all of which, occupying some 200 pages of the book, are presented to the reader in a manner which cannot but prove most beneficial.

The rapid examination that we have made of "Advanced Agriculture," reminds us very much of similar works on the same subjects, which we have read in French, such as the works of Magne and of Sanson.

We can well commend it to those who are interested on the subject and certainly to the veterinarians.

Every Man his own Horse Doctor. By George Armatage, M.R.C.V.S. (fifth edition). Frederick Warne & Co., London and New York.

We have on previous occasions noticed works from the same

author and have credited him for their value. To-day our attention is called to this new book, the fifth edition of a previous one, which was issued nearly twenty years ago, in 1879.

This edition is far ahead of those which successfully have been presented to the public in 1885, 1889 and 1892, it is considerably enlarged, is illustrated by steelplates and numerous cuts of value, and contains as complete a description of the diseases of horses, with indications of treatment, as can be expected in a work of this kind. It is not, properly speaking, a work of classical value, nor one which can be considered as the book for veterinary students, and yet they, or even the old practitioners, will find in it many points of interest and of value.

To the ordinary reader, to the private horse owner, Mr. G. Armatage has presented an excellent work; by its perusal they will obtain a great deal of good information, and we believe, lots of good advice, and yet, valuable as *every man his own horse doctor* may be; popular as its reading may prove, we cannot help but think that we have found more professional value in other works which it has been our privilege to read from the same author.

The entire subject of equine pathology is divided into ten principal sections; the eleventh and twelfth which follow treat more of surgical affections and operations. Section thirteenth speaks of poisons, while section fourteenth forms a dispensatory semi-therapeutic and materia medica. A brief dictionary or glossary completes the 858 pages of the work, which is handsomely gotten up, well printed and easily read.

Manual of Veterinary Microbiology. By Prof. Mosselman and Liénaux; translated and edited by Prof. R. R. Dinwiddie, of the Arkansas Agricultural Experiment Station. Robert Clarke Co., Cincinnati, O.

Prof. R. R. Dinwiddie has done a service to the veterinary profession in translating Mosselman and Liénaux's *Manual of Veterinary Microbiology* into the English language, and thus made this valuable work accessible to those not conversant with

French. It is a fairly complete resumé of our knowledge on the subject, with especial attention to the pathogenic varieties that now occupy so large and increasing a share of medical attention. In most works on bacteriology, the microbiology of animal diseases is relegated to a subordinate position, the maladies which affect human beings being necessarily of primary importance. The reverse is here the case, and those concerned in the treatment of animal diseases, the book fills an entirely unoccupied place.

The first portion is devoted to general considerations of the morphology and physiology of microbes. The second portion treats of the pathogenic microbes, their transformation and destruction, and their relation to hygiene and therapeutics. The third and last portion considers the microbic diseases individually, and the latest methods of combating them.

The book is not intended to be a laboratory manual, and consequently the technique of staining and cultivation of germs is not exhaustively treated. An increase in the number of illustrations would have been an advantage; more especially as the veterinarian rarely gets the opportunity to familiarize himself practically with these organisms. We can heartily recommend the work to our readers.—W. GOTTHEIL.

Investigations Concerning Bovine Tuberculosis, with special reference to diagnosis and prevention. Conducted under the direction of Dr. E. Salmon, Bureau of Animal Industry. Bulletin No. 7.

This is a large pamphlet of some 180 pages with illustrations containing the report of the investigations made by Drs. Theobald Smith, F. L. Kilborne and E. C. Schroeder concerning the diagnosis and prevention of tuberculosis, to which is added the results of tests made in the use of tuberculin by Dr. E. A. de Schweinitz.

At this time when tuberculosis occupies so much of the public and scientific attention, these reports will prove very interesting and of great value, especially when they are the results of

the work done by authors already known by their previous investigations in similar directions.

The pamphlet can be considered as divided in five parts. In the first are presented clinical and pathological notes on a herd of sixty cattle tested with tuberculine; in the second are experimental observations on the presence of tubercle bacilli in the milk of cows. The third and fourth contains studies in bovine tuberculosis, with special reference to prevention and practical suggestions for the suppression and prevention of the disease. The fifth by Dr. E. A. de Schweinitz treats of tuberculine and its use.

The six illustrations¹ are not made up in the style that we have been accustomed to find in similar works from the bureau, but are still good suggestions of the lesions they are intended to represent.

Production du Lait. (The milk production) by Ch. Cornevin.

This little volume is one of the publications of the *Scientific Encyclopædia* published under the direction of Mr. Leanté of the Institute, and is due to the pen of the well-known Professor of the Veterinary School of Lyons. It is divided in three parts, each of which contains several chapters, where the milk and its secreting sources with the etiology of the qualitative and quantitative changes are considered; then follows the points of selection of good milch cows, either as breeds or individuals, concluded in the third chapter on the subject of exploitation of milching cows principally in the point of view of hygiene.

The origin of the book speaks sufficiently of its value.

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Sundries.—Bulletin State Experiment Station of Louisiana, Iowa Health Bulletin, State Board of Health Bulletin of Tennessee.

VETERINARY LEGISLATION.

AN ACT to establish "The State Live Stock Sanitary Commission" and to provide for the control and suppression of tuberculosis and other dangerous diseases of domestic animals in Pennsylvania.

SECTION 1.—Be it enacted, etc., that a commission is hereby established to be known as "The State Live Stock Sanitary Commission." This commission shall consist of five commissioners to be appointed by the governor as follows: The Secretary of the State Board of Agriculture, a practical breeder of live stock, the Secretary of the State Board of Health, and two competent and qualified veterinarians who are members in good standing in any legally chartered Veterinary Medical Association of this State who are graduates in good standing of some recognized and reputable veterinary college. Each commissioner shall be appointed for a period of four (4) years, and shall be subject to removal by the governor for incompetency or neglect of duty.

SEC. 2.—It shall be the duty of the commission to protect the health of the domestic animals of the state, to determine and employ the most efficient and practical means for the suppression, control or eradication of dangerous, contagious or infectious diseases among the domestic animals, and especially of tuberculosis, and for these purposes it is hereby authorized and empowered to establish, maintain, enforce and regulate such quarantine and other measures relating to the movements and care of animals and their products, the disinfection of suspected localities and the destruction of animals as it may deem necessary to prevent the spread and transmission of contagious or infectious diseases.

SEC. 3.—Whenever it shall be adjudged necessary to the interests of the live stock industry of this state or to the welfare of the public to kill an animal or animals suffering from some contagious or infectious disease and an agreement cannot be made with the owner or owners thereof as to their value; three appraisers shall be appointed, one by the owner or owners of the cattle, one by the commission or commissioner and a third by these two, who shall under oath or affirmation appraise the animal or animals at their actual value at the time of the appraisal and the owner shall be paid one half of the appraisal, provided that no such appraisal shall exceed fifty dollars for single unregistered cattle or seventy dollars for single registered cattle or forty dollars for a glandered horse or mule, and further provided that no animal or animals found to be infected with a contagious or infectious disease within ninety days after having been brought from another state into Pennsylvania, shall be paid for, but notwithstanding, the commission shall be authorized to slaughter such animal or animals if in their judgment such a course is necessary to the interests of the live stock industry or to the welfare of the public. and provided that in case it shall be found upon making the autopsy of an animal appraised and killed by order of the commission or of a commissioner that such animal was not at the time of slaughter suffering from the contagious or infectious diseases supposed to have been present, the entire appraised value shall be paid to the owner or owners.

SEC. 4.—The commission or any commissioner or any of their duly authorized agents shall at all times have the right to enter any premises, farms, fields, pens, buildings, cars or vessels where any domestic animal is at any time quartered, or wherever the carcass of one may be, for the purpose of examining it in any way that may be deemed necessary to determine whether they are or were the subjects of any contagious or infectious disease.

SEC. 5.—Any person or persons wilfully violating any of the provisions of this act or any of the regulations of the "Live Stock Sanitary Commission" or wilfully interfering with officers appointed under this act, shall be deemed guilty of misdemeanor and shall upon conviction be punished by a fine not exceeding \$100, or by imprisonment not exceeding one month or both at the discretion of the court.

SEC. 6.—The commission is hereby empowered to employ such assistants and agents and to purchase such supplies and materials as may be necessary in carrying out the provisions of this act, and to administer oaths or affirmation to the appraisers appointed under this act.

SEC. 7.—The salaries of the commissioners shall be fixed each year by the governor.

SEC. 8.—For the purposes of this act the sum of \$500 annually is hereby appropriated.

SEC. 9.—This act shall go into effect July 1, 1895, and all acts or parts of acts inconsistent herewith are hereby repealed.

CORRESPONDENCE.

VETERINARY EDUCATION.

Editor AMERICAN VETERINARY REVIEW :

SIR :—In the last issue of THE REVIEW Dr. D. A. Cormack, of the South Dakota Agricultural Experiment Station, attempts to criticise my articles on education, published in the issues of July and August. It appears to me that the doctor feels himself hurt, for which I am sorry. For while I earnestly believe the time has come for a uniformly higher veterinary education in America, I, like Dr. Cormack, "want to see the change brought about with as little friction as possible." Truth hits hard ; but it is sincere and honest, and there is no meanness about it.

While this may explain my feelings in the matter, I can see no reason, on the other hand, why I should apologize for anything I have said, if it is construed in the proper light. When, therefore, Dr. Cormack says that I made a "wholesale onslaught

upon the bulk of graduates from the two-year schools," he construes wrong. In the first part of my article I said: "One or two of the old two-term schools have done good work in years gone by and actually fulfilled a mission; they have sent out a sort of rough-and-tumble practitioner, but a man with a ready practical judgment and eminently fitted for the peculiar needs of the country in times past. Some of these men, by their perseverance, honest principles and constant self-education had met with wonderful success." This utterance is certainly no onslaught, but, if anything, is a compliment. I maintained, however, that some of our two-term schools have turned out during the last few years hundreds of men who are utterly unfit for the profession from a moral and scientific standpoint, and who cannot but disgrace the profession. If Dr. Cormack would have ever met these men as I have, he would certainly agree with me that they are "the modern quacks." The old quack was known to have no college education and was largely excused for his misdoings on account of this. But when a man spreads out a great, big diploma and then turns out to be of low character and of little better professional education, if any, than the old empiric; then the intelligent public gets rightly disgusted, and they turn away with contempt from the veterinary profession, whereas the money-making diploma-mills should be blamed, for they should not accept such men as students.

Another fact will illustrate that same right in urging a higher education: Dr. Salmon states at the last meeting of the U. S. V. M. A. that of the thirty veterinarians who took the examination for meat inspectors under the Civil Service rules, only *two* passed, and *those two were foreigners*. Will you please reflect, Dr. Cormack?

Apparently Dr. Cormack is a little behind the times if he includes Montreal and the New York Schools into the two-term schools. Montreal has been a three-years school as I know of it, and has turned out some very clever veterinarians. Both the New York schools have adopted a three-year course, and have now more students than ever before.

There is a strong probability that not many of the two-term schools will be left before long. They have ceased to pay and that settles it with most of them. One such school has just closed its doors, another had a row between professors and students, and the latter have applied for admission at another college. The remainder of the two-term schools, I am glad to say, are willing to change under certain conditions. The Kansas City Veterinary College is willing to make hers a three-year school if the Chicago Veterinary College does so; and this latter college is willing to change if the Toronto school leads. Several graduates of this school have sent me an invitation to be present at a meeting in Canada for the purpose to request "the control of the Ontario Veterinary College by the Government, the raising of the college standard, and to exclude illiterate persons from the ranks of the profession."

All this indicates that the ball has been set rolling, and I am so glad about these indications that I shall only urge these to "go on." I hope they will come out of this change a better, a nobler set of schools, and I rely for this upon the words of the great poet, "that the whirling of time brings round redress."

OLOF SCHWARZKOPF.

TRAUMATIC PERICARDITIS IN THE XVII. CENTURY.

WOODBURY, N. J., Dec. 4, 1894.

Editor AMERICAN VETERINARY REVIEW :

DEAR SIR :—The subjoined extract will probably be of interest. In the fourth volume of the Diary and Correspondence of Saml. Pepys, Secretary to the Admiralty, in the reign of Charles II. and James II., are some letters on the subject of "Second Sight"; in one of these Lord Tarbat, speaking of "Elf Arrows" (evidently arrow-heads of the old or new stone age), states that the country people (Scotch) believe that the elves shoot them into the hearts of cattle, and "Lord Tarbat, or some other lord, did produce one of these elf-arrows which one of his tenants or neighbors took out of the heart of one of his cattle."

Truly,

T. B. ROGERS, D.V. S.

VETERINARY EDUCATION.

Editor AMERICAN VETERINARY REVIEW :

DEAR DOCTOR:—Having noticed several articles on the subject of better education for the veterinary surgeon, especially at matriculation, I enclose you copy of letter received by us, which you can use or destroy,* as you see fit, not in any way intending to reflect on the college named, but simply to ask : What examination did this young man pass ?

Yours,

W. G——.

“ April, 6. 94.

“ SIR.—I would like to *practis unde* you the following
 “ *Sumer* have had one *years practis* tended college last year &
 “ part of this at the —— Veterinay college in —— Will help
 “ you for Board & Room —. for Reference Addres Prof. ——
 “ *Veterinay* College.

“ Yours truly ”

ANSWER TO CALIFORNIA QUACKERY.

SACRAMENTO, Cal., November 22, 1894.

Editor AMERICAN VETERINARY REVIEW :

SIR :—We would respectfully crave your permission to reply to a long-eared demonstration published in the last issue of THE VETERINARY REVIEW, under the heading, “An Eastern Veterinarian’s Estimation of California Quackery.”

The article referred to does the profession in this State a rank injustice, and it would lead us to believe that the author’s deportment during the time he was located in California, was such that his associates consisted largely of quacks and charlatans; it would also lead us to believe that he was grossly ignorant of the workings of the California State law which regulates the practice of veterinary medicine and surgery. If this

* We thought better to publish it.

person was capable of interpreting the law aright, he would know that the law does not apply to men practicing in towns which have less than two thousand inhabitants, neither does it apply to castraters. Even in towns which have less than two thousand inhabitants the law has accomplished wonders towards the eradication of the quack. This is mainly due to the fact that imposters located in small towns are situated in the same boat as the person who wrote the article referred to above, in California parlance, they do not "savee" the law, as they believe it applies to the State as a whole.

That the law, such as it is, is vastly superior to any and all laws enacted by Eastern States, is a fact well known to all who have inquired into its workings. It does not, as most State laws in the East, allow a man who can make an affidavit that he has drowned a domesticated animal once or twice during the three or five years previous to the passage of such an act, but it requires all non-graduates practicing in cities and towns of two thousand inhabitants or over, to pass a practical examination before a board of examiners, who have full power to grant licences to any and all who can satisfy them as to their competency to practice veterinary medicine and surgery,

That the board has been lenient in some respects we do not deny, but if we understand the objects of the law correctly, its objects are not to work a hardship on the deserving empiric, but rather to stamp out an element composed of quacks and fakirs. This we believe it has done to a considerable extent, and as a result we can truthfully say that the veterinary profession in this State has gained more social and professional prestige in the past two years than it has in any other State in the Union in the same length of time.

It does seem to us, Mr. Editor, that some people will never attain the great art of attending strictly to their own business. Some people's minds are so disposed that it is impossible for them to avoid villifying any measure adopted by members of their own profession, rather than crediting them for what they have accomplished, and refraining from exposing to the public

eye their possible shortcomings and blunders. Even if the Board of Examiners have allowed their sympathies to gain control of their better judgment, which we doubt, it is the duty of every veterinarian, in justice to himself and his profession, to hide the fact from the gaze of those whose evil dispositions keep them constantly on the alert for a fitting or unfitting opportunity to throw some mud in vindication of their professional jealousy.

You yourself, Mr. Editor, must realize the advancement of the profession in this State, at least it is only a short time ago since we noticed a complimentary remark in your journal, and we do not know that we can leave the matter in better hands than yours to decide whether the article in question was a gross fabrication emanating from the mind of one who is unable to realize that there are some men who are devoted to their profession as a matter of principle and professional pride, or whether it was an arraignment for the purpose of satiating an ever-existing morbid appetite born of a jealous and abject disposition.

Respectfully,

R. A. ARCHIBALD, V.S.

SOCIETY MEETINGS.

MISSOURI STATE VETERINARY MEDICAL ASSOCIATION.

The third annual meeting of the Missouri State Veterinary Medical Association was held at Merchants' Hotel, St. Louis, Mo., on October 12, 1894.

Dr. T. B. Howard, President of Nevada, Mo., in the chair, morning session.

There were present Drs. T. B. Howard, Nevada, Mo., T. F. Arnoid, Lewiston, Mo., L. M. Rlutz, Clinton, Mo., T. L. Wolf, Kansas City, Mo., J. B. Black, Kansas City, Mo.

The minutes of previous meeting read and approved.

The following named gentlemen presented themselves for membership and were elected: Drs. A. Rouif, J. M. Philips, A. E. Philips, M. M. M. McNelly, E. N. Farrell, of St. Louis, Mo.;

L. F. Booth, of Moberley, T. J. Turner, State Veterinarian, of Columbia, T. F. Kierman, Jefferson City, T. E. White, of Sedalia, Mo.

Dr. M. R. Trumbower, State Veterinarian, of Illinois, was elected an honorary member. Meeting adjourned until 2 P. M.

Meeting again called to order at 2 P. M. Dr. Arnold read an interesting paper on "Actinomycosis," and handled the subject very intelligently,

Dr. L. M. Klutz then followed with a paper entitled "Veterinary Science," which was also very interesting.

Dr. M. R. Trumbower then kindly entertained the meeting with a description of the new laws of Illinois relating to contagious diseases, etc.

The following names were presented and duly elected as members: Drs. R. J. Sollberger, C. W. Crowley, B. F. James, A. J. Hamerstein, H. B. Piatt and Chas. Ellis, all of St. Louis, Mo.

Dr. M. H. Schelle, M. D., was elected an honorary member.

Election of officers being next in order the following named gentlemen were duly elected and installed: Dr. T. J. Turner, State Veterinarian, of Columbia, Mo., President; Dr. T. F. Arnold, of Lewiston, Vice-president; Dr. F. L. DeWolf, of Kansas City, Mo., Treasurer, and H. B. Piatt, of St. Louis, Mo., Secretary.

No further business, the meeting adjourned to meet at Moberly, Mo., on the first Wednesday in September, 1895.

H. B. PLATT, *Sec.*

TWELFTH ANNUAL MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

SHERMAN HOUSE, Chicago, November 26-27, '94.

The meeting was called to order at 2.00 P. M., November 26th, by the president.

The roll being called the following members responded to their names:

Drs. A. C. Alverson, A. H. Baker, F. L. Brown, A. Babb, L. Campbell, V. E. Frizzel, J. T. Hattress, C. E. Sayre, John Scott, R. W. Story, F. S. Schoenleber, A. M. Story, M. R. Trumbower, J. H. Ullrich, J. L. Tyler, M. Wilson, R. G. Walker.

The minutes of the last regular meetings were read and approved.

The president's annual address was then listened to.

The treasurer being absent from last regular meeting was unable to make a complete report.

The reports of the standing committees were received and the committees discharged.

Drs. Cuning and Newby being absent, but having sent their papers,* they were read by the secretary.

Dr. R. W. Story was then called upon for his paper on "Acute Indigestion."

The usual lengthy discussion of the disease followed.

The meeting adjourned until November 27th, at 10.00 A. M.

November 27th.—Upon reconvening, the president called upon Dr. H. R. Trumbower, the State Veterinarian who spoke on "Actinomycosis," and the methods pursued in the inspection of meats at the Chicago Yards.

This was followed by many remarks from the members on the methods that ought to be pursued in the inspection of meats in the country, for local consumption, also on the dangers arising from the use of flesh and milk from diseased animals for human consumption.

Dr. Tyler was then called upon for his paper on "Omphalo Phlébitis."

The meeting then adjourned until 2.00 P. M.

Upon reconvening, Dr. C. E. Sayre was called upon for his paper on "Homœopathy in Veterinary Practice."

This paper brought forth quite an animated discussion, but was ably defended by Dr. Sayre from his standpoint.

* These papers will be published in our next issue.

Dr. S. S. Baker then read his paper on "Remarkable Cases in Practice," and was followed by Dr. Campbell in his paper on "The Unexpected Recovery of a Case of Sunstroke."

The following gentlemen's names were then proposed for membership :

Dr. Harry G. Hoover, American Veterinary College, '94, Sterling, Ill., vouched for by Dr. Trumbower ; Dr. Chas. W. Johnson, Chicago Veterinary College, '87, Elburn, Ill., vouched for by Dr. A. H. Baker ; Dr. E. L. Quitman, Chicago Veterinary College, '91, Chicago, Ill., vouched for by Dr. A. H. Baker ; Dr. W. G. Neilson, formerly of Veterinary College, '91, Monmouth, Ill., vouched for by Dr. R. W. Story.

A motion was made by Dr. Wilson, seconded by Dr. Baker, that the above-named gentlemen be elected to membership by acclamation. Carried.

The election of officers resulted in the following named gentlemen being elected for the ensuing year :

President, Dr. M. Wilson, Mendota, Ill.; Vice-president, Dr. A. G. Alverson, Bloomington, Ill., Secretary, Dr. A. Babb, Springfield, Ill.; Treasurer, Dr. H. W. Storey, Princeton, Ill.

Board of Consors.—Dr. C. E. Sayre, M. R. Trumbower, J. T. Nattress.

Dr. Wilson taking the chair, Dr. Trumbower made the suggestion that a new association be formed, consisting of members in the Mississippi Valley.

Remarks in favor of such an association being formed were made by various members, and a motion made by Dr. S. S. Baker and seconded by Dr. Trumbower to the effect, that the secretary be instructed to correspond with the secretaries of associations in surrounding states regarding the formation of such an association was carried.

The question of legislation regarding the introduction of a bill, in the Legislature, to regulate the practice of veterinary medicine and surgery in this State was next discussed.

It was found that the members of this association present were in favor of the introduction of such a bill, and a motion

made by Dr. A. H. Baker, seconded by Dr. Scott, that the sum of \$10.00 each be subscribed to defray expenses of introducing such a bill, was carried.

Dr. Baker moved and seconded by Dr. Scott that the chair appoint a committee of three, to be known as the Committee on Legislation, and such committee be given power to act. Carried.

The chair appointed as such committee, Drs. S. S. Baker, John Scott and J. T. Nattress.

Bills to the amount of \$50.85 were audited and ordered paid.

The following standing committees were then appointed:

Committee on Programme.—Drs. S. S. Baker, J. T. Nattress, T. J. Gunning,

Committee on Arrangements.—Drs. John Scott, A. H. Baker, H. R. Trumbower.

Committee on Membership.—Drs. J. L. Taylor, A. M. Story, W. J. Martin.

A vote of thanks was tendered the retiring officers for efficient services, also to the essayist, and to the proprietors of the hotel for their accommodations.

The meeting then adjourned to come together at the call of the committee in Peoria next February.

MATTHEW WILSON, M.R.C.V.S., *Sec.*

OBITUARY.

DR. GEORGE A. PETERS.

Dr. George A. Peters, one of the trustees of the American Veterinary College, died recently in New York. Though not a veterinarian, Dr. Peters took a great interest in the work done by the institution to which he belonged, and was a close observer of the progress of veterinary medicine in the United States. His death makes vacant a seat which can be filled by another good man, but by no one more enthusiastic than he was.

PROF. WALLEY OF THE ROYAL DICK COLLEGE.

At the last hour going to press the news reaches us of another great loss in the veterinary profession by the death of Prof. Walley, which took place on the 10th of December.

SUNDRY CLIPS AND NOTES.

TRICHINA IN THE HORSE.

It is a common custom in America as well as in England to find that veterinary editors are attached to agricultural or sporting papers with various objects, the main one being to give gratuitous advices, as answers to inquirers having animals ailing with various diseases. It is not our object to consider the propriety of such work, which, in many instances, is of no advantage to the inquirer, we fear of little advantage to the proprietor of the journal, of small pecuniary results to the person who gives the answer, and we have no hesitation to consider, at the very least, a breach of professional etiquette.

But this, right or wrong as it may be, it seems to us that it would become the veterinary editor of some of our agricultural papers to watch at the issue which may be sent broadcast in the issue of the journal to which he belongs.

These remarks are suggested to us by the reading of an article in the *National Stockman and Farmer*, where, out of an editorial on "Horseflesh for Food," we find this sentence: "The medical men warn the eaters of horse-flesh that the horse is peculiarly liable to the disease known as trichinosis. . . ."

Of course, the time has not come yet when in this country horse-flesh will be admitted as one of the various meats found in our butchers' shops and, therefore, little danger will ever exist from its use; but if there is ever to be one, it certainly will not be found in the presence of the *trichina spiralis*.

TUBERCULOUS MEAT: IS IT UNFIT FOR FOOD?

Leclainche, of Toulouse (*Revue de la Tuberculose*. July, 1894,

p. 133), collates the results of many experiments, and considers that there are no authentic cases of tuberculosis arising from the ingestion of diseased beef, and that it is very rare that we can experimentally transmit the disease even by inoculating diseased meat into Guinea-pigs, the most susceptible of all animals to the infection. It is proper to authorize the consumption of all tuberculous meat after it has been completely sterilized by heat, says Leclainche.—*Medical Record*.

METHOD OF DESTROYING CARCASSES OF DISEASED ANIMALS AT HAMBURG.

This usually difficult task is said to become an easy, successful process by the use of a destructor made at Augsburg by Riedinger. It consists of a large iron cylinder or drum, horizontally placed, and revolved by a two-horse-power engine. This cylinder is approached from above, and there is an opening in the side through which the matter to be destroyed is introduced. At each operation three tons can be treated. Plates are arranged inside to throw the mass toward the center. At the beginning steam under pressure is introduced for two hours and a half into the inside of the cylinder. Then, at a pressure of two or three atmospheres, steam is sent into the jacket surrounding the cylinder. By a clever arrangement the fat is extracted, the gases are drawn into the chimney and rendered inoffensive, and the waste matter is converted rapidly into valuable manure in the form of a brown powder. Such destruction of carcasses cost the city much money formerly, but this apparatus yields a profit of \$2,500 dollars per year, not allowing for cost and salary. New machines are being constructed with notable improvements.

Condemned meat is sprinkled with petroleum (or crude carbolic acid) after being incised. These permeate the mass and preclude the possibility of its being accepted as food.—*Ibid*.

MISSOURI STATE BOARD OF AGRICULTURE.

Twenty-sixth Annual Report—from which we extract :

From the report of State Veterinarian Dr. J. T. Turner, we find that the live stock of the State is in a very satisfactory condition from a sanitary standpoint. The figures obtained show :

Diseases treated in 1892,	29;	in 1893,	24
Contagious diseases	" 4;	"	3
Glanders and farcy	" 187;	"	109
Tuberculosis	" 111;	"	3
Actinomycoſis	" 27;	"	2
Texas fever	" 327;	"	5

The improved condition in the health of the live stock of the State and the decrease in number of contagious diseases and number of affected animals, is no doubt due to the value of our veterinary service and the watchfulness and efficiency of the State Veterinarian.

CORRECTION.

NOTES ON SO-CALLED SLOW FEVER.—On page 592 the word *impotent* in the eighth line from the bottom of the page should read *putrid*, and in the second prescription, page 593, the words *Liq. potass arsenic* should read *Liq. potass arsenitis*.

PRESCRIPTIONS.

The following, taken from some of our exchanges, can find that application in our practice :

For ozema—℞. Acidi carbolic, gr. xv̄x.
 Resorcin (erys.) gr. xiv.
 Glycerni, ʒ iss.
 Aqua, g. s. ad. ʒ xii. M.

To be used as a spray.

For eczema—when there is abating of the inflammation:

R̄. Sulphur (washed). 1 part.

Zinci oxidi, 4 “

Vaseline, 39 “

Or again

R̄. Acidi Salicylic, 1 “

Zinci oxidi, 40 “

Vaseline, 300 “ Mix.

ASSISTANTSHIP WANTED

By Veterinary Surgeon (M.R.C.V.S., Eng.), anywhere in western or southern states. Highest references and testimonials can be forwarded; ten years' experience. Single. Address,

G. W. L.,

Care of Dr. FRAME, M.D.C.,
Colorado Springs, Col.

AMERICAN VETERINARY REVIEW,

FEBRUARY, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

PLEURO-PNEUMONIA AGAIN.—The newspapers at the beginning of the year have brought us the important news that the veterinary press of this country can scarcely overlook. It is to the effect that the Belgian Government has prohibited the importation of live cattle from the United States, on the ground that pleuro-pneumonia is prevalent in this country. And in the presence of such a statement, the veterinary profession of America must feel justified to ask: Is it true? Is it possible that after all the good work so efficiently performed by the bureau of animal industry; after the official proclamation, which announced the fact that this country was free from the disease; after the careful watching which has been carried out at the quarantine stations, of importation—that notwithstanding all these, the profession and the public should have been deceived, and that the disease is yet on our shores, or has been allowed to re-enter the United States.

To the proper authorities we feel that we have the right to apply for information—for positive assurance. It is of too great importance to the value of the work of the veterinarians who have been engaged in the stamping out of the disease, which we all believe they have carried out so successfully, to know

that they were right in their endeavors to protect our live stock, in advocating the wholesale slaughter of cattle—which was done ; the re-enforcing of vexatious measures, and the large expenses which were involved in the work carried out by the bureau.

We feel that pleuro-pneumonia is stamped out in the United States ; we know it is, and on that account feel that the regulations of the Belgian Government have other reasons for their application besides the one named, “the presence of contagious pleuro-pneumonia.”

What has our chief of the bureau to say about it ?

BOVINE TUBERCULOSIS.—The subject of tuberculosis, its presence, and the measures which ought to be applied to control its ever-growing extent, is one which now occupies the attention of all interested in the cattle business. Of its presence and its enormous extent we know pretty well. For years back veterinarians, in their special capacity, either as official State veterinarians or private practitioners, have raised the cry of the danger ahead ; and even our journals have in many instances called the attention of the authorities to the danger which was threatened by its presence—and notwithstanding all these nothing was done. All advices were neglected, and free opportunities were left for the disease to extend—and it did—in such a manner that States which considered themselves as comparatively free from it are now obliged to acknowledge that the various percentages which were named and denied then, are unfortunately, correct.

And now preventive measures are the order of the day. The grand result obtained in the management of pleuro-pneumonia is looked upon as possible in the management of tuberculosis. The great differences which exist between these two scourges of cattle, that of their mode of origin, and of contamination, are overlooked. The fact that one is only affecting bovines and is harmless to human beings, while the other is common to both species of living organisms, and is transmissible

from one to the other, and vice-versa—all those seem to be ignored. And yet who does not know that pleuro-pneumonia can be stamped out from bovines, and never be allowed to return if proper measures are taken? Tuberculosis, on the contrary, can never be entirely extinguished, and, at best, the opportunities of its transmissibility to human beings can only be diminished, and that only to a very limited extent, and only also with the possibility of a temporary check to a new extension.

These are the facts, which, no doubt, will render the work undertaken by some States if not useless at least very unpopular and of little advantage; and to that account is due, we believe, the opposition that is met with in Massachusetts to the smooth execution of the work of the cattle commissioners in that State.

From numerous papers which we have received we hear of objections and protestations from various parts of that State to the work, coming from the farmers and cattle owners. The slaughter in Massachusetts, even the test of tuberculine, is objected to, and application is to be made to the legislature to regulate the work in a more suitable manner in the interest of the public at large.

It is not our desire to criticise at present the work recommended by the honorable chairman of the cattle commission in Massachusetts, but we fear that in his enthusiasm, or by higher orders, he is obliged to carry out an undertaking which will not prove as satisfactory as that carried out in the days when pleuro-pneumonia existed in that State.

Doubting, or rather not believing, in the complete eradication of tuberculosis, we are of the opinion that milder measures would bring on as good results, with less expense and with more willingness on the part of the people to assist the authorities in carrying out a work the results of which would be beneficial to all parties concerned.

In advancing this humble opinion of ours, we believe that we will meet with others, who have great doubts of this house-cleaning process as done in Massachusetts. Prof. Law, among

those, has already expressed his opinion in suggesting the enforcement of milder measures, essentially sanitary—and when we consult the writings of European authorities on the subject we find similar suggestions.

EMBARGO ON AMERICAN CATTLE.—We notice an editorial in the November issue of the *Journal of Comparative Medicine* in which the recent action of Germany and Denmark in placing an embargo upon the importation of American live cattle is censured as “uncalled for” and as a retaliatory measure.

We are glad to see these questions of the day discussed in our professional journals, for what we have to say must necessarily be of value in clearing up such controversies. But the editor of the journal, in our opinion, is so wide of the mark in his arguments, that we feel justified in presenting another view of the vexed question.

Thus *The Breeders' Gazette*, the patrons of which are directly concerned in this measure, and a journal which has become excellently posted on such international disputes, has the following to say :

The singular thing about all this hue and cry over Germany's “repressive” attitude toward American products is the fact that certain ignorant people about the capital insist on misinforming the public that it is purely a political move on the part of Germany in the line of retaliation for our differential duty against German sugar. The fact is that no people on earth are so careful as to what they put down their gullets as the Germans. Their government is paternal enough to enforce the strictest laws against the sale of unwholesome and adulterated food products of every kind. We are too “democratic” on this side to pay any attention to the adulterators of food products who are swindling and poisoning us fairly at their will. Germany for years scheduled our pork because it was not inspected for trichinæ as all German pork is before being allowed on the market. We blustered about in a manner quite in keeping with our reputation on the other side and charged “discrimination,” “protection to German producers” and all such stuff, but had not the sense to institute an inspection of our own so that we could guarantee the wholesomeness of our products to a people who eat pork half raw. Finally, after *The Gazette* had preached such inspection for years, it was instituted and immediately the German barriers against our pork fell. The Fatherland has just scheduled our cattle, and again the cry goes up of retaliation against us. The weaklings who utter this cry do not seem to know that if Germany had wanted to retaliate she would have attacked our pork and not our beef. She can injure us by shutting out our pork, whereas our exports of cattle and beef are com-

paratively insignificant. As a matter of fact the German "vets" have found some disease in our cattle. They would not dare declare it if they had not. What this disease is we do not know. We are certain it is not pleuro; it is not claimed to be; it may be the cornstalk disease; it may be a "ship fever," which exposure at sea encourages. Possibly it is Texas fever, as they say. If so, they simply have yet to learn thoroughly the nature of this peculiar disease, for it will not harm them.

This view comes nearer a practical understanding of our relation to foreign markets. Nothing is more absurd than to explain the execution of laws of other countries by our inbred conception of American politics. In Germany especially, politics has not reached the point where it pollutes the laws existing for the prevention of infectious diseases. True, the agrarian party is pleased with such restrictions, because every member of this party is as high a tariff man as Mr. McKinley. But to accuse them of conspiracy is absurd in the extreme.

So much for an explanation. Let us now examine the reports from Germany. The *Berlin Thierarztliche Wochenschrift*, one of the editors of which is connected with the imperial health office, simply states that State Veterinarian Vollers, in Hamburg, had reported a transfer of American cattle diseased, bearing SUSPICION of Texas fever. In consequence of this reluctant opinion Prof. Schutz, of Berlin, was dispatched, and he took with him some organs of the diseased cattle. After three weeks of investigation he declared the disease Texas fever, and as a result the Imperial Health Office issued the restrictions as prescribed by law. No fuss was made about it in any German journals, because such restrictions are common occurrences.

We believe that if Dr. Salmon would have kept the matter in his own hands and fought it out on scientific grounds, it would possibly be satisfactorily settled by this date. But when the question was allowed to resume a political and diplomatic shape, a settlement may be difficult and far off. One thing sure to us, and that is, that the American veterinary profession has gained nothing by this dispute, as it should have; but as the foreign veterinarians appear to be correct, we rather fear that our reputation as American veterinarians will be impaired for some time to come.—(O. S.)

ORIGINAL ARTICLES.

SOME EXPERIMENTAL RESEARCHES ON THE USE OF MALLEINE.

By PROF. A. LIAUTARD, M.D., V.M.

A paper presented to the Congress of Hygiene at Buda-Pest.

(Continued from page 714.)

RESUME OF THIRTY-FIVE OBSERVATIONS UPON THE EFFECTS OF MALLEINE.

1st Observation. FARCY.—Bay gelding, aged, has farcinous cords on the left hind leg; he is in good condition; temperature on September 25, 1892, at 8 A. M., is $102\ 3-5^{\circ}$; at 8 P. M., 103° ; on the 26th, 103° in the morning, 104° in the evening; on the 27th, at 8 A. M. it is 102° ; he receives $2\frac{1}{2}^{\circ}$ cc. of a solution of Roux malleine, prepared according to directions, viz., 1cc. of brute malleine in 9 cc. of carbolized distilled water.*

At 10 A. M.	temperature is 104 .	Swelling on the shoulder.
At 12 "	" " $104\ 2-5$.	Increased double in size.
At 2 P. M.	" " $103\ 2-5$.	Remains the same—horse has slight colic.
At 4 "	" " 103 .	
At 6 "	" " $102\ 3-5$.	
At 8 "	" " 102 .	On the 28th, at 8 A. M., thermometer register, $102\ 3-5$; the swelling is very large.

The cords have considerably increased since the 25th, and the body is so extensively covered with farcinous ulcers that the horse is destroyed.

This being our first observation, it is possible that the technic of the operation has not been as perfect as it might have been.

2d Observation. ABANDONED BY ITS OWNER.—This is an old horse, owned by a physician, who abandons it as being

* All injections were made on one or the other sides of the neck.

unable to do his work; he is in very good condition. The following is the record obtained in testing the effects of malleine in healthy subjects:

Oct. '92.	14.—8 A. M.	Temperature	99 1-5	8 P. M.,	99 1-5
"	15.— "	"	99 1-5	"	99 4-5
"	16.— "	"	99 3-5	"	99
"	17.— "	"	99 2-5	"	99 1-5
"	18.— "	"	99 1-5—receives 2½ cc. sol. Roux malleine.		
"	" 10 "	"	98 2-5		
"	" 12 M.	"	98 3-5—small swelling.		
"	" 2 P. M.	"	98 1-5		
"	" 4 "	"	99 2-5—swelling quite prominent.		
"	" 6 "	"	99 1-5		
"	" 8 "	"	99 3-5		
"	" 10 "	"	99		
"	19.—8 A. M.	"	99 3-5—swelling most gone.		
"	20.—8 "	"	99 3-5— " all gone.		

3d Observation. SUPPURATION OF THE SINUSES AND NECROSIS OF THE PALATE.—A six-year-old horse in horrid condition; having suppuration of the sinuses, necrosis of the palate, two upper molars have been extracted, the horse is poor, unable to eat, starving, turned over to us for destruction. The temperature registers as follows:

Oct. 14, '92.—8 A. M.,	100 4-5	6 P. M.,	100 4-5.
" 15,	" 101 1-5	"	101 1-5.
" 16,	" 99 3-5	"	100.
" 17,	8 A. M., 100	—receives 2½ cc. of Roux malleine.	
" "	10 "	99 1-5	
" "	12 "	98 4-5—slight swelling.	
" "	2 P. M.,	99 2-5—swelling little more prominent.	
" "	4 "	99 4-5—	
" "	6 "	100 1-5—	
" "	8 "	100 2-5—smaller and more diffuse.	
" "	10 "	100 1-5—	
" 18,	8 "	99 1-5—almost gone.	
" 19,	8 "	99 —gone.	

4th Observation. GLANDERS AND FARCY.—An old horse, brought to the college clinic with all the symptoms well marked of glanders and farcy:

Oct. 17, '92—at	3 P. M.,	temperature is	103 ;	at 8 P. M.,	102 4-5.
" 18, " "	8 A. M.,	"	" 100 2-5 ;	" " "	100 4-5.
" 19, " "	8 "	"	" 101 4-5 ;	receives 2	1-2 cc. of Roux malleine.
" " "	10 "	"	" 102.		
" " "	12 M.,	"	" 102 3-5—	swelling as large as an egg.	
" " "	2 P. M.,	"	" 102 2-5—	swelling very large, painful, warm.	
" " "	4 "	"	" 102	—large farcinous cords, some of which ulcerate on the 21st.	
" " "	6 "	"	" 102 3-5.		
" " "	8 "	"	" 102 1-5.		
" " "	10 "	"	" 102 1-5		
" 20, " "	8 A. M.,	"	" 101 3-5—	evening 102.	
" 21, " "	8 "	"	" 102 3-5—	evening 102 2-5.	

5th Observation. SAME HORSE.—Little satisfied with the general reaction, though the local had been enough characteristic, the observation is renewed on the same horse :

Oct. 21, 8 A. M.,	temperature is	102 ;	at 8 P. M.,	102 2-5.
" 22, 8 "	"	" 101 2-5 ;	" 8 "	100 2-5.
" 23, 8 "	"	" 101 4-5 ;	" 8 "	101 1-5.
" 24, 8 "	"	" 101 1-5 ;	receives 2	1-2 cc. of Roux malleine.
" " 10 "	"	" 101.		
" " 12 M.,	"	" 101 1-5.		
" " 2 P. M.,	"	" 101.		
" " 4 "	"	" 101.		
" " 6 "	"	" 101 1-5.		
" " 8 "	"	" 101.		
" " 10 "	"	" 101.		
" 25, 8 A. M.,	"	" 102 1-5 ;	" 8 P. M.,	101 3-5.
" 26, 8 "	"	" 101 2-5.		

This time the injection was made on the opposite side of the neck, the swelling became very large, diffuse, warm, painful, and only began to subside after forty-eight hours. It did not suppurate.

This observation evidently coincides with what has been reported by Mr. Nocard. Even if the thermic reaction is missing, the local effects must not be neglected, as means of diagnosis.

6th Observation. CHRONIC SUPPURATIVE SYNOVITIS. — Bay gelding, nine years, in good condition. From a severe traumatism of the left hock, suppuration has developed itself; has been blistered several times; presents no symptoms of glanders or farcy :

Oct. 31, '92 at 10 A. M., temperature	102 ;	6 P. M.,	102 1-5.
Nov. 1, " " 8 " "	" 100 4-5 ;	6 " "	101 2-5.
" 2, " " 8 " "	" 101 1-5 ;	received 2 1-2 cc. Roux malleine.	
" " " " 10 " "	" 100 3-5.		
" " " " 12 M.,	" 100 3-5.		
" " " " 2 P. M.,	" 100 4-5.		
" " " " 4 " "	" 101 2-5.		
" " " " 6 " "	" 101.		
" " " " 8 " "	" 102.		
" " " " 10 " "	" 101.		
" 3, " " 8 A. M.,	" 100 4-5.	The swelling was very small, and had disappeared the next morning after the injection.	

7th Observation. GLANDERS.—An old horse which presents all the symptoms of glanders well marked, gland, discharge, chancres. Admitted November 28, 1892. His record is as follows :

Nov. 28, '92, at 8.15 A. M., temperature	101 4-5 ;	6 P. M.,	100 4-5.
" 29, " " 9.30 " "	" 101 3-5 ;	receives 2 1-2 cc. Roux malleine on the left shoulder.	
" " " " 11.00 " "	" 101 3-5.		
" " " " 1.30 P. M.,	" 102 4-5.		
" " " " 3.30 " "	" 104 3-5.	This horse has had chills, cold extremities, a very large swelling, painful, which kept on increasing till Dec. 1st, when it suppurated very abundantly.	
" " " " 5.30 " "	" 105 3-5.		
" " " " 7.30 " "	" 106.		
" " " " 9.30 " "	" 105 3-5.		
" 30, " " 8 A. M.,	" 103 4-5.		
" " " " 11.30 " "	" 104.		
" " " " 6 P. M.,	" 103.		
Dec. 1, " " 9 A. M.,	" 104 3-5.		
" " " " 6 P. M.,	" 103.		
" 2, " " 8 A. M.,	" 103.		
" " " " 6 P. M.,	" 102.		

8th Observation. SUPPURATIVE PNEUMONIA.—An old gray horse destined for anatomical work ; thin and worn out :

Dec. 5, '92, at 9	A. M.,	temperature 100;	6 P. M., 100 3-5.
" 6, " " 8	"	" 99;	receives 2 1-2 cc. of Roux malleine.
" " " " 10.30	"	" 98	3-5.
" " " " 12.30	"	" 100.	
" " " " 2.30	P. M.,	" 99	3-5.
" " " " 4.30	"	" 100.	
" " " " 6.30	"	" 101	1-5.
" " " " 8.30	"	" 103.	
" " " " 10.30	"	" 103	4-5.
" 7, " " 8	A. M.,	" 100.	
" " " " 12.30	P. M.,	" 99	1-5.

He has had chills and general spasmodic pains, but little swelling which rapidly disappeared. At the post-mortem in the dissecting room, suppurative pneumonia of the anterior lobes of both lungs was the only lesion found.

9th Observation. GLANDERS.—A roan horse submitted to the malleine test by order of the Board of Health; he presents all the symptoms of chronic glanders:

Dec. 7, '92, at 3	P. M.,	temperature 100;	6 P. M., 100.
" 8, " " 8	A. M.,	" 99 4-5;	6 " 100 1-5.
" 9, " " 8	"	" 100 3-5;	receives 1 1-2 cc. of Washington malleine.
" " " " 11	"	" 100	4-5.
" " " " 1.30	P. M.,	" 101;	small swelling.
" " " " 3.30	"	" 101	3-5; larger swelling.
" " " " 5.30	"	" 102	4-5.
" " " " 7.30	"	" 103	4-5; extremities cold.
" " " " 9.30	"	" 104	1-5; swelling increasing.
" 10, " " 8	A. M.,	" 102.	
" " " " 6	P. M.,	" 102	3-5.
" 11, " " 8	A. M.,	" 101.	
" " " " 5	P. M.,	" 103.	
" 12, " " 8	A. M.,	" 102	1-5; swelling begins to diminish.

10th Observation. SUSPICIOUS OF FARCY.—Young horse, 6 years old, in excellent condition. Two months ago had an attack of maxillary adenitis, from which he recovered. For the last few days a swelling of the right hind leg, extending upwards to the stifle, has appeared, and two small suspicious ulcers on the coronet. He is admitted to the hospital on December 27, 1892, with a temperature of 102 2-5°. On the 28th the

thermometer registers $100\ 3-5^{\circ}$ in the morning, 101° at noon and $102\ 1-5^{\circ}$ in the evening.

On the 29th, in the morning, he receives 1 cc. of malleine from Washington, with the following results:

Dec. 29, at 8 A. M., temperature $101\ 2-5$.

" " " 10 " " $101\ 4-5$.

" " " 12 M., " $102\ 2-5$.

" " " 2 P. M., " $103\ 3-5$.

" " " 4 " " $103\ 3-5$.

" " " 6 " " 104 .

" " " 8 " " 104 .

" " " 10 " " 104 .

" 30, " 8 A. M., " $101\ 3-5$.

The swelling at 2 o'clock was well marked, hot, painful, with lymphatic cords all round the point of injection. At post-mortem glanderous lesions were found.

11th Observation. GLANDERS AND FARCY.—Bay gelding, 6 years old, in poor condition, has a large chancre, a characteristic gland, slight discharge from the nose, and the left hind leg the seat of a farcinous swelling. The diagnosis is positive. Admitted March 2, 1893, with a temperature of 103° , the 3d it is down to 99° in the morning and $101\ 2-5^{\circ}$ at 8 P. M. On the 4th he receives 1 cc. of Washington malleine:

March 4, 8 A. M., temperature 101 .

" " 10 " " $101\ 2-5$.

" " 12 " " $101\ 2-5$; small swelling appears.

" " 2 P. M., " $102\ 2-5$; more marked.

" " 4 " " $103\ 3-5$; very large and painful.

" " 6 " " $103\ 4-5$.

" " 8 " " $103\ 3-5$.

" " 10 " " 103 .

" 5, 8 A. M., " $101\ 4-5$; swelling larger than yesterday.

" " 8 P. M., " $101\ 2-5$.

" 6, 8 A. M., " $101\ 1-5$; begins to diminish.

12th Observation. SUSPICIOUS LYMPHANGITIS.—Aged roan gelding, has been very ill with a maxillary adenitis complicated with facial lymphangitis, which has supplicated; now has cords of farcinous aspect upon the sides of the face, with some ulcer-

ated abscesses. He is in good condition; temperature varies between 100° and 102° ; he enters the hospital on March 9, 1893, with a register of 102° at 8 A.M., and receives 1 cc. of malleine from Washington:

March	9,	10	A. M.,	temperature	100 1-5.
"	"	12	"	"	100 2-5.
"	"	2	P. M.,	"	100 2-5.
"	"	4	"	"	101.
"	"	6	"	"	100 2-5.
"	"	8	"	"	100 2-5.
"	"	10	"	"	100 2-5.
"	10,	8	A. M.,	"	100.

There is not the slightest local reaction. He made a complete recovery.

13th Observation. SUSPICIOUS GLANDERS.—Bay mare of 6 years, in good condition; for some time has suffered with a thick cough, and has had an intermittent running at the nose mixed with blood. Lately this has reappeared, more abundant and suspicious in character. The animal is playful, and all its functions are normal. Admitted March 18, 1893, with a temperature of $100\ 2-5^{\circ}$, which is the same on the 19th; he receives on the 20th 1 cc. of malleine from Washington:

March	20,	8	A. M.,	temperature	100.
"	"	10	"	"	100.
"	"	12	"	"	100 2-5; slight swelling.
"	"	2	P. M.,	"	101.
"	"	4	"	"	100 4-5; slight swelling, little painful.
"	"	6	"	"	101 1-5.
"	"	8	"	"	101 2-5.
"	"	10	"	"	101; swelling smaller.
"	21,	8	A. M.,	"	100; 6 P. M., 100 2-5; swelling gone.
"	22,	8	"	"	100 1-5.

14th Observation. FARCY.—Bay gelding, 9 years old, farcy buds on the legs and the side of the body; farcinous swelling under the abdomen; general conditions fair. Admitted April 4, 1893.

April 4th and 5th, temperature in the morning $101\ 3-5^{\circ}$, in the evening $102\ 2-5^{\circ}$; on the 6th he receives $2\frac{1}{2}$ cc. of Roux malleine:

April 6,	8	A. M.,	temperature	103.
" "	10	"	"	102 4-5.
" "	12	"	"	102 4-5 ; small swelling.
" "	2	P. M.,	"	102 1-5 ; more marked.
" "	4	"	"	102 1-5.
" "	6	"	"	102 1-5 ; still larger.
" "	8	"	"	102 4-5 ; very large, hot and painful.
" "	10	"	"	103 2-5.
April 7,	8	A. M.,	"	104.
" "	10	"	"	103.
" "	12	"	"	103 4-5.
" "	2	P. M.,	"	104 2-5.
" "	4	"	"	104 4-5 ; respiration short and accelerated.
" "	6	"	"	104 4-5.
" "	8	"	"	105 1-5.
" "	10	"	"	105 3-5.
" 8,	8	A. M.,	"	105 ; swelling less painful but diffuse.
" "	10	"	"	105.
" "	2	P. M.,	"	104 3-5.
" "	6	"	"	104.
" 9,	8	A. M.,	"	102 3-5.
" "	6	P. M.,	"	104 3-5 ; horse destroyed. no post-mortem.

15th Observation. GLANDERS AND FARCY. — Old black horse, in poor condition ; has farcinous ulcers on the legs, runs at the nose and chancres on the left side. Admitted April 5, 1893, at 6 P. M. with a temperature of 102 4-5°. Receives the next day 1 cc. of malleine from Washington :

April 6,	8	A. M.,	temperature	100.
" "	10.30	"	"	99 3-5.
" "	12.30	"	"	100 1-5 ; small swelling.
" "	2.30	P. M.,	"	100 2-5.
" "	4.30	"	"	100 2-5.
" "	6.30	"	"	101 2-5.
" "	8.30	"	"	102 2-5.
" "	10.30	"	"	103 1-5 ; swelling of middle size.
" 7,	8	A. M.,	"	103 2-5.
" "	10	"	"	103.
" "	12	"	"	103 1-5.
" "	2	P. M.,	"	102 4-5.
" "	4	"	"	103.
" "	6	"	"	101 3-5.
" "	8	"	"	103.

April 7,	10	P. M.,	temperature	102 3-5.
"	8, 8	A. M.,	"	102 2-5.
"	" 2	P. M.,	"	103 3-5.
"	" 6	"	"	102 2-5.
"	9, 8	A. M.,	"	99 4-5 ; swelling began to diminish.

Post-mortem.—Lungs filled with glanderous tubercles; septum nasi and turbinated mucous membrane covered with chancres.

16th Observation. GLANDERS.—Gray gelding, 7 years, good condition, has gland, nasal discharge, one chancre on the septum. Admitted June 6, 1893, with a temperature of 101 3-5° at 12 o'clock at noon and 101 2-5° in the evening. The 7th of June the thermometer registers 101 1-5° and 101 2-5°. The 8th he receives 2½ cc. of German malleine at 8 A. M.*

June 8,	8	A. M.,	temperature	102 3-5.
"	" 10.30	"	"	103.
"	" 12.30	"	"	103 2-5.
"	" 2.30	P. M.,	"	104 1-5.
"	" 4.30	"	"	104 1-5.
"	" 6.30	"	"	104 2-5.
"	" 8.30	"	"	104 4-5.
"	" 10.30	"	"	104 4-5.
"	9, 8	A. M.,	"	104.
"	" 12	M.,	"	103 1-5.
"	" 6	P. M.,	"	103.
"	10, 8	A. M.,	"	103 1-5.
"	" 6	P. M.,	"	102.
"	11, 8	A. M.,	"	102 2-5.
"	" 6	P. M.,	"	102 1-5.
"	12, 8	A. M.,	"	101 4-5.
"	" 6	P. M.,	"	101 4-5.

The swelling four hours after the injection measured about three inches in diameter, was hot, painful and did not begin to diminish until the 10th, over forty-eight hours after the injection.

* Prepared in October, 1892; this malleine was given to me by Dr. J. A. Teautweller, who has received it from Germany.

(To be Continued.)

OMPHALO PHLEBITIS.

By JOHN L. TYLER, M.D., Chebanse, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

In essaying to write upon this subject, I do so more for information and to bring out an expression from the profession than with any thought of contributing anything worthy of note.

The disease consists chiefly of an inflammation of the umbilical vein, which often involves the surrounding tissues, followed by suppuration and pyæmia. The inflammation commences soon after birth, and I have noticed in the majority of my cases that there was also persistence of the urachus as a complication. The stump of the cord is swollen, painful and moist, and after the disease is fully developed, a discharge of pus is seen issuing from the navel, and you can also pass a probe high up the vein. The colt is dull, stands with its back arched, and refuses to nurse. The respiration is hurried, the temperature ranges from 103° to 104° F., and there is constipation.

Another complication, which is always or nearly always present, and appears after the disease has been running several days, is arthritis, and usually the hock joints are the ones first attacked. The presence of this complication I am unable to explain, unless it is from thrombû lodging in the joints and producing thrombosis. This might be, as there is always more or less of a thrombotic condition of the omphalic vein, and a little piece being broken off might be carried through the circulation and lodged in the joints and produce this condition. But why the especial selection of the joints? I have found in several post-mortems abscesses in the liver, due, no doubt, to infection through the vein which runs almost direct to that organ; also that the vein was filled with fœtid puss, and in some cases I have found symptoms of peritonitis, while in others this symptom was lacking.

The liver is usually enlarged, anæmic and nodulated, and the points that I have opened are filled with thick, creamy pus.

The causes of this disease are numerous, such as irritation

from any cause, exposure to cold and dampness, severing the cord too close to the body ; but the chief cause, I think, to be infection from manure, urine, etc., or from other affected animals. There may be a specific germ causing the disease, but whether or not this is so, I am unable to state, never having experimented any in this line; but this much I am satisfied of, that an affected animal should not be allowed to run with others whose navels have not thoroughly healed.

In the line of treatment, I rely more upon prophylaxis than upon curative treatment.

As soon as a colt is foaldded, I instruct my patrons to dust on a little iodoform and to keep them in as clean a place as possible, and I have never seen a case of phlebitis occur after these precautions had been attended to at birth.

Affected animals should be isolated at once and placed in clean, well-ventilated dry quarters.

Antiseptic treatment is indicated throughout the course of the disease. If the vein is closed up at the external opening and puss has already formed, open freely and allow good drainage, and syringe out with hydrogen peroxide.

I have used both moist and dry antiseptic dressings to this part, but I find by experience that the dry ones are the most serviceable. For this dressing iodoform fills all the requirements better than any other ; I have tried boracic and salicylic acids but they are hardly powerful enough.

If a moist dressing is desired, carbolic acid in oil or in form of an ointment is the best one that I know of.

Internally, I usually give aconite combined with a little belladonna to control the fever, but I place more confidence in salicylate of sodium as a curative internal agent than any other. I usually give from 10 to 20 grains at a dose.

When arthritis is present or threatened, I find hot applications to be very serviceable, and when pus has formed I draw it off through a fine canula that I can connect to a large hypodermic syringe, and after doing so I inject into the joint a mixture composed of olive oil 1 $\frac{5}{8}$ and iodoform 1 $\frac{3}{4}$. This mixture

should be heated to a body heat. I sometimes apply a mild blister over the joint after this but not always.

If the constipation requires attention, a little castor oil or tincture of aloes usually suffice, or an injection of warm water.

In case of persistence of the urachus, I single it out, catch it up with an artery forceps, draw it down and ligate it with cro-mated cat-gut or silk.

REMARKABLE CASES IN PRACTICE.

By S. S. BAKER, D.V.S., Chicago, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

MR. PRESIDENT AND GENTLEMEN:—The first case I wish to call your attention to, is one that occurred in a seven-year-old driving mare belonging to the Stone Carriage Company.

I was called to see the mare on November 21, 1893, at 9 A.M. and found her suffering with acute indigestion. I gave her a colic draught and repeated it three times, after which the animal appeared to be all right. Before leaving, however, I gave her an ounce ball of aloes. At 11 o'clock that night the owner called me again; when I reached the stable, I found the mare as bad as ever. Gave anodyne drench and advised her removal to the hospital, and she was at once started with the groom, the owner telling me she had been perfectly quiet since I left her in the morning, till just before he called me the second time, but had refused her feed and would drink nothing; she was quite uneasy the rest of the night. After her arrival at the hospital, and in fact was so for three days; the pains were not continuous by any means, but would occur an hour or two apart. Gave opiates, hot water enemas and hot applications to bowels and stomach.

The second day the temperature began to go up slowly, and on the fifth day it reached 102° F., which was as high as it went. But the animal would not eat nor drink. Pulse went to 75° and remained there; it was very small and weak; ears and extremities cold, and could only be kept warm by rubbing and bandaging.

There was no pain after the third day, the patient standing in a very listless way, not noticing anything that went on, and never moving unless she was made to; she still refused to eat or drink. There was not the slightest murmur in the bowels from the start.

After waiting three days to give the bolus a chance to get in its work, and failing to do so, I gave two pints of oil; that was the morning of the fourth day of the attack; that evening gave two pints more. Next morning, the fifth day, there being no motion in the bowels, gave one pint of oil; that evening gave two pints. Next morning could hear no sound; gave another pint, making one gallon of oil and eight drams of aloes she had taken in six days with no results. During all this time I gave physostigma, nux vomica, hyoscyamus and belladonna; repeatedly gave whiskey, sulphuric ether and quinia frequently. You can perhaps imagine my feelings when owner would call up occasionally to know how she was getting along; I could of course give him no encouragement.

About this time Dr. Wilson was in town, and I asked him to advise me in the matter; he said it was a very peculiar case and a very doubtful one. He recommended the administration of powerful stimulants and also oatmeal drenches in the shape of gruel.

I tried the gruel, and got about a quart a day down with the greatest difficulty, the patient absolutely refusing to swallow it. Having poured so much oil down her, I began to fear the consequences in case it ever started, so stopped it. On the eighth day I called in Dr. A. H. Baker in consultation; he thought I had a fatal case, but advised small doses of oil six hours apart. I kept this treatment up till I had two quarts more oil in her, making a gallon and a half of oil altogether. Finally, on the eleventh day of the attack, there being no sound in the bowels whatever, I began giving hypodermic injections of salicylate eserine in one-quarter grain doses every few hours; continued this treatment till noon of the twelfth day, when the bowels began to rumble.

Remember that up to the present time the patient had not eaten a mouthful of anything of her own accord, or drank a drop of water, nor had she laid down since the third day.

There is no need of my telling you that I was about as discouraged a mortal as you could find. Nothing that I had done (and I had done a lot) seemed to do any good, and I wondered why she did not die, still I felt it would reflect on me more to have her die after being in my hospital two weeks than if she had died on the start.

I had tried her with every imaginable kind of feed,—carrots, corn, oats, meal, turnips, apples, cabbages, bread, etc., in fact everything I could think of, and still she would only smell of it and turn away.

I left her at 11 P. M. of the twelfth day, completely dejected and tired of trying to do anything for her, and with my mind fully made up that anything more I gave her would be a waste of material, as nothing could save her.

Her pulse was just about imperceptible, and as she looked at me as I stood rubbing her nose, I thought I had never seen so anxious a countenance before, in fact it made me feel sick.

Her general appearance was of a skeleton, with the hide drawn over it.

As I passed through the kitchen on my way to bed, I saw a raw potato lying on the table; I involuntarily picked it up, went back to the patient, and held it up to her, and what a surprise, instead of turning away after smelling it, she eat it with a great relish. I went back into the house, and filling my pockets with potatoes, returned to the patient, and she eat them all with eagerness. Well I knew the crisis had passed, and I was as happy as I had previously been dejected.

Next morning she eat a little oats and took a drink of water, and that night about 11 o'clock, she passed the first fæces since she was taken sick, making twelve days without eating a mouthful or drinking a drop of water, and thirteen days without a movement of the bowels.

From that time her recovery was very rapid, the owner

telling me a few days ago that since her recovery she has been as hearty and well as ever. I forgot to say that on the eleventh day of the mare's sickness one of the sub-maxillary glands began to enlarge, and on opening it a few days afterwards I got a profuse discharge of pus.

DID I MAKE A WRONG DIAGNOSIS?

For sake of argument, I head my next case as above. This was in a pug dog of about the ordinary size and weight. I was called to see the dog on the 18th of May, 1894.

I found the dog off his feed, coat staring, some pain, nose hot and dry, etc., and diagnosed it as a case of indigestion, and prescribed for that trouble. In a few days I saw him again, and he appeared to be doing nicely, and consequently told the lady that I would not call again unless she telephoned me. About a week afterwards I was called again, the dog showing somewhat different symptoms to what he did before. He could bark as loudly as ever, and jump up into a chair, but could not get down alone, and had to be lifted down.

He seemed to be in great pain at times; he could not walk very well without its hurting him, and when he did he carried a stiff hind leg. He could lie down without any inconvenience or pain, but could not get up very well, and always had to be coaxed; in fact, lying down and jumping into a chair were the only things he could do that did not seem to hurt him.

I examined him very carefully, but could find no soreness, heat or swelling. There was a slight elevation of temperature and a hard pulse.

I diagnosed it as a rheumatic complication, and prescribed for same. He was not eating at all, so ordered him fed with a spoon.

I called again in a few days and found him still unwilling to exercise any, but did not seem to be in so much pain, and concluded that he was doing all right, and told the lady to continue the treatment, and let me hear from her if she wanted anything more.

About three weeks from the time I was first called, I received a very urgent call to the same patient. I found the

pug could not move without the most excruciating pain; he had considerable fever, pulse rapid, small and hard. I also found the lady in tears and the family generally broken up, expecting, of course, the death of the household pet.

Of course I couldn't give them any very great amount of encouragement, and consequently I got hauled over the coals without gloves—they did not hesitate to tell me that they not only did not believe I could save him, but that I did not know what the matter was with him. And, gentlemen, I confess to you, that they were right. I did not know what ailed the patient, but as they were good pay, and I was getting a little warm under the collar on account of their reflections, I made up my mind I would find out what ailed the dog or die in the attempt (that is one of us would die). So laying him on the kitchen table, I made an examination, if I ever did, and with all the manipulations and punchings, I could only find one little spot that hurt him at all, and that was on the left side over the stomach. Still there was no swelling or heat. You could maul him all over and he would not whimper, but put him on his feet and attempt to move him, and his yells were fearful.

After locating the only sore spot on the dog, I decided as I had been told that I did not know what ailed the dog, to cut in over this spot and find out if that had anything to do with it. There being no swelling or heat there, it seemed as though I was pinning my reputation to a very frail hope; but as I could find no other external symptoms, I made up my mind that there was something wrong there, and that I would find the secret if I went for it; so sending for assistance, and the family out of the room, I made an incision over the sore spot, cutting in quite deeply between the ribs, but got nothing; went still deeper, and inserted a probe; on withdrawing it I found it covered with pus; on probing awhile I struck something hard and took it to be a splinter off of a rib. I made a larger incision and inserted my fore finger and could plainly feel something which I still took for a piece of rib, as there was no possibility of anything else being

there. I did not like to make the opening any larger to enable me to be positive of its nature, so inserted a pair of forceps and took hold of the hard substance I had found.

I gave a pull, the dog yelped and I brought out what? A piece of a fractured rib? No! but a hardwood meat skewer, four and one-half inches in length and one-eighth of an inch thick, which I offer for your examination. I did not faint away, nor did I think I had discovered a four-footed skewer factory, but I will acknowledge that I was surprised and relieved; surprised because I did not see how a dog of that size could swallow a log of that length and live; relieved because I knew my reputation was saved.

I called in the family, who were still in tears, to see the pug, who was a good deal more lively than before the operation.

After dressing the wound and putting a bandage around him, I asked for a history of the skewer, and they at once remembered (but had forgotten it when I first asked for a history of the case) that they had seen him with a piece of meat on the skewer a few days before I was first called, and they made a grab for it, fearing that he would swallow it, but the dog grabbed too, and they could not find the skewer, although they did not believe he had swallowed it, but from the sequel he had done so.

The pug made a rapid recovery, but he always growled whenever I went to see him afterwards; he evidently felt that I ought to have helped him sooner, and perhaps he was right.

ACUTE INDIGESTION.

By DR. W. STORY, Princeton, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

The stomach of a horse is small in proportion to the size of the animal, and digestion takes place quickly. A horse can undergo pretty severe exertion after a hearty meal without showing any inconvenience.

However, the stomach of a horse is liable to derangements, and perhaps the most serious is acute indigestion. It is very

common in this country, especially in the spring and fall, from the continuous hard work and necessarily liberal feeding. It is usually induced by over-feeding, that is, eating too much at a time, more especially when the animal has been tired and hungry. It sometimes occurs from his breaking loose in the night and gorging himself at the corn-bin. Another frequent cause is overloading the stomach with clover or green feed when wet ; this often induces violent and fatal indigestion.

Symptoms.—Digestion may be arrested either by the food undergoing no change, forming a dangerous load, or running rapidly to fruitful fermentation. In the former case the animal is dull and stupid, the pulse is slow and the breathing oppressed. If he have access to water it speedily sets up fermentation ; gas being rapidly evolved the stomach is greatly distended, the belly swollen, colicky pains set in, he rolls about in great agony, looking first to one side then to the other, kicking his belly with his feet, he gets up and down and tosses about in despair. The bowels remain unmoved. The sweat rolls off him in streams, and in many cases death puts an end to his suffering in from eight to ten hours, caused by rupture of the stomach or bowels or inflammation of the intestines.

Treatment.—It is more easily prevented than cured, by simply attending to the following rules : Never let a horse get too hungry ; never give him too much at a time ; never put him to work on a full stomach and never let him drink too freely after feeding, and we will seldom see this fatal disease. Treatment must be prompt to be effectual. There are various remedies recommended by different practitioners. If there is distension of the abdomen, with gas, puncture without delay, and after the gas has been drawn off inject hypodermically two tablets of No. 631, composed of eserine sulphate, $\frac{1}{4}$ grain ; philocarpine mur., $\frac{1}{2}$ grain ; strychnine sulph., $\frac{1}{4}$ grain, followed by a cathartic ; also stimulants, with judicious counter-irritations, or blankets wrung out of hot water, placed over the abdomen and covered up with a dry one to retain the heat. If there is much pain give belladonna, as it is preferable in most cases.

HOMOEOPATHY IN VETERINARY PRACTICE.

By Prof. C. E. SAYRE, M.D., D.V.S.,

(A paper read before the Illinois State Veterinary Medical Association.)

As the majority of veterinarians have not investigated the history of homœopathy and the principles of *similia similibus curantur*, I shall deviate somewhat from the subject in the first part of this paper and show that the principle of homœopathy was recognized by the earliest writers on medicine. Hippocrates says: "By similar things disease is produced, and by similar things, administered to the sick, they are healed of their diseases. Thus, the same which will produce a strangury when it does not exist will remove it when it does." The learned Dr. Francis Adams, in his translation of the works of Hippocrates, published in 1849 by the Sydenham Society, thus comments upon this passage:

"The treatment of suicidal mania appears singular—'Give the patient a draught made from the root of mandrake, in a smaller dose than will induce mania.' He then insists, in strong terms, that under certain circumstances purgatives will bind the bowels and astringents loosen them; and he further makes the important remark that although the general rule of treatment be *contraria contrariis curantur*, the opposite rule also holds good in some cases, namely, *similia similibus curantur*. It thus appears that the principles of both *allopathy* and *homœopathy* were recognized by the author of this treatise. In confirmation of the latter principle, he remarks that the same substance which occasions strangury will also sometimes cure it, and so also with cough. And further, he acutely remarks that warm water when drunk generally excites vomiting, but also sometimes puts a stop to it by removing the cause." *

Evidently Hippocrates had partially proved this drug (mandrake), and found it to produce mania, and had also used

* *What is Homœopathy?* By Dr. Sharp.

it, with good results, in a similar form of mania. It is one of the remedies frequently indicated in delirium, especially of children during teething.

In confirmation of Hippocrates' statement about strangury Dr. Groenvelt wrote a small book on the successful treatment of strangury, and other affections of the bladder, by the internal use of cantharides.* The irritating effect of cantharides on the urinary tract is well known, full doses inducing inflammation, strangury and hæmaturia.

For this method of treatment he was committed to Newgate, on a warrant of the President of the Royal College of Physicians, London, in 1694.

Prof. Wood makes the following statement, in speaking of the therapeutic use of ipecacuanha: "In sick stomach, of nervous origin, such as occurs in pregnancy, minute doses of ipecacuanha have so often met with success that there can be no doubt of their value. One drop of the wine, in a teaspoonful of water, should be given every hour."†

Certainly this is a homœopathic prescription on the principle of *similia similibus curantur*, or like cures like, and the dose also. For we find that a drop of the wine of ipecacuanha contains 7,709–100,000 of a grain; and the same author recommends thirty grains as a dose for an adult. Numbers of others have noted the fact that some remedies cured symptoms similar to those which they produced when taken by the healthy, but no one seemed to be impressed by the fact until Hahnemann, about 1790, while translating Cullen's "*Materia Medica*," was not satisfied with his description of the action of Peruvian bark, so decided to take it himself to determine its effects. After taking it for several days he had a violent chill, fever and sweat, similar to an attack of intermittent fever, from which he had suffered a few years previously, which had been cured by

* *Titus Cantharidum in Medicinâ Usus Internus*. Per Joannum Groenvelt, M.D., e. Coll. Med., Lond. Editio Secunda, 1703.

† *Therapeutics; Its Principles and Practice*. By H. C. Wood. Seventh edition, page 657.

Peruvian Bark. He discontinued the experiment and recovered his health, and then tried it again, with the same results. He then induced some of his friends to try the experiment, with similar results. It then dawned upon him that this was the secret of the curative action of drugs, that they cured symptoms similar to those they produced when taken by the healthy. He then tried other remedies, and found that each drug produced symptoms peculiar to itself. He then carefully administered the remedies he had proven on the healthy, in cases with similar symptoms, first to his own family, and then to other patients, with very gratifying results.

After fifteen years, in which he had proved sixty drugs on himself and had prescribed them in his practice, he then offered his discovery to the profession, saying: "I believe I have discovered a system which will render the practice of medicine certain and its success brilliant. I have labored fifteen years to test my discovery. My own experiments, and the testimony furnished by the records of medicine, convince me of its truth. I lay it and them before you, my colleagues, and I conjure you, in the name of truth, by the interests of humanity, to investigate it candidly and without prejudice."

This discovery was claimed by Hahnemann to be a natural law of cure, and the experience of thousands corroborate his conclusions.

That there was no law or regular mode of practice previous to this, or at the present time, is a well-known fact. Many of the leading allopathic physicians doubt the efficacy of their treatment. Sir John Forbes says, in 1846: "In a considerable proportion of diseases it would fare as well, or better, with patients in the actual condition of the medical art as more generally practiced, if all remedies, especially drugs, were abandoned." Things (in medicine) have arrived at such a pitch that they cannot be worse; they must mend or end."

Dr. Adams, the learned translator of Hippocrates, says, in 1849: "One cannot think of the changes in professional opinion, since the days of John Hunter (at the close of the last

century), without the most painful feeling of distrust in all modes of treatment."

Hippocrates made a similar statement twenty-two hundred years ago: "The whole art is exposed to much censure from the vulgar, who fancy that really there is no such thing as science in medicine, since even in acute diseases practitioners differ so much among themselves, that those things which one administers as thinking the best that can be given another holds to be bad."

Such differences as this never occur among homœopathic practitioners, as they prescribe according to a fixed natural law.

"The law of homœopathy, as expressed in the words *similia similibus curantur* (likes are to be treated with likes), should be understood as a simple statement of a natural fact, of universal occurrence, under certain conditions, which are essential, and in the absence of which it does not occur."*

Allopaths, as a rule, look upon homœopathy and sugar pills as synonymous, and reject it without investigation. The homœopathic law *similia similibus curantur* has nothing to do with the dose. A tablespoonful of castor oil may be prescribed in a certain case of diarrhœa, and be a perfectly homœopathic prescription, and be followed by recovery. Yet this same case, if given the remedy in the potentized form, would have recovered much quicker, and not have suffered the pain caused by the large dose. The allopath will say that the recovery is due to the large dose emptying the bowels of the irritating matters that are causing the diarrhœa. If that is the case, why are not all cases of diarrhœa, in which it is administered, followed by recovery? It is a well-known fact that only certain cases are. In the proving of castor oil we find "diarrhœa stool whitish, watery, bloody mucus frequent. During stool foetid flatus, burning at anus."

Homœopathy simply means that a remedy given to the healthy

* *The Principles of Homœopathy.* By Dr. Sharp.

individual will cause symptoms which it will relieve in the sick. Experience has proved that the smaller the dose the more quickly the patient recovers from the natural disease, and the more quickly it recovers from the effects of the drug. The objection is raised to the smallness of many homœopathic doses, that they can have no effect, as many remedies cannot be detected by the most careful chemical analysis after the sixth dilution.

That the effect of the remedy does not depend on the ability to detect it by chemical analysis, is proved by the following : " Viper's poison is a yellow liquid, which, when analyzed chemically, cannot be distinguished from simple gum water. Yet the smallest portion which can be taken on the point of a needle, and inserted by a puncture in the skin, will cause death." * The inhalation of ipecacuanha has nearly caused death in a number of cases. The following is quoted from Dr. Scott, in the *Medical and Physical Journal*, Volume XXIV., page 233, of a lady, the wife of a physician : " One attack, caused by being near her husband at the time he put some ipecacuanha into a bottle, was so violent as nearly to prove fatal. There was a remarkable stricture about the throat and chest., with very troublesome shortness of breathing, with a peculiar kind of wheezing noise ; the symptoms were aggravated at night. At 3 o'clock in the morning she was gasping for breath at the window, pale as death, her pulse scarcely to be felt, and in the utmost danger of suffocation. She became easier about 11 A. M. till 11 P. M. The same scene was continued eight days and nights."

This shows that very minute doses may have a powerful effect, and it is doubtful if the small quantity inhaled by the lady could be detected by chemical analysis.

The perfume of a flower cannot be measured, weighed or analyzed by the chemist, yet we are conscious of it by the sense of smell.

The contagion of scarlet fever cannot be felt, seen or detected

* *Thompson's Animal Chemistry*, page 538.

by the sense of smell. Yet no one will question its power. That ordinary allopathic doses are frequently followed by grave consequences no one can doubt. Samuel Cooper, in describing the best modes of administering mercury, says : " Occasionally it attacks the bowels, and causes violent purging, even of blood. At other times it is suddenly determined to the mouth, and produces inflammation, ulceration, and an excessive flow of saliva." " Mercury, when it falls on the mouth, produces in many constitutions violent inflammation, which sometimes terminates in mortification." * Dr. Sharp says : " I have seen it cause in a young lady, who had taken blue pills for an attack of fever, the mortification and separation of the greater part of the lower jaw."

Moliere asserts : " Most people die of their remedies and not of their diseases."

I am often asked how the small dose administered can act, to which I am compelled to answer : I do not know. If I were to ask an allopathic prescriber how the large dose acts, I should receive the same answer.

Sir Isaac Newton says : " I have not been able to discover the *cause of the properties of gravity* from phenomena, and I frame no hypothesis, for whatever is not deduced from the phenomena is to be called an hypothesis, and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy. To us it is enough that *gravity does really exist and act according to the laws which we have explained.*" † So, with the homœopathist, it is enough to know that the small dose *does act according to the law of " similia similibus curantur,"* of which we have ample proof by experience. " It is certainly true," says Dr. Routh, an eminent allopath, in an argument against homœopathy, " that small doses, and especially in large dilution, will oftentimes act very satisfactorily. I have seen this repeatedly." Every

* Cooper's *Surgical Dictioaary*. Art. Mercury.

† *Close of the Principia*.

advance in medicine has met with strong opposition from the mass of the profession. The French Academy, in 1642, declared that the blood did not circulate; in 1672, that it was impossible. In 1609 it expelled one of its members for using quinine in the treatment of ague; the great allopathic specific in the treatment of that disease of to-day. In fact, many claim that it is the *only specific* in the entire materia medica. The great Harvey was persecuted for his discovery of the circulation of the blood. The opposition which Dr. Jenner met with when he brought forth his theory of vaccination as a preventive against small-pox is well known.

Homœopathy met with a similar reception. Hahnemann was compelled to move eleven times, by the persecution of his colleagues, under cover of the law, which they had passed, prohibiting physicians from dispensing their own prescriptions. This, of course, prevented Hahnemann from practicing, as no apothecary could put up his medicines. He was eventually driven to Paris, where he died in 1843, at the age of 82. In 1851, the Council of Leipsic (his last place of residence in Germany) appropriated a beautiful plot of ground for a site for a monument of Hahnemann, the man who they had forced to leave their city thirty years before, as an unauthorized and illegal prescriber.

(To be Continued.)

REPORTS OF CASES.

ENTERO-UMBILICAL FISTULA.

By M. FRANCIS, Texas.

On January 24, 1894, a three-year-old gray mule was brought to the infirmary for treatment. The following history was given: For several months there had been noticed a hole through the umbilicus through which considerable quantities of ingesta would escape whenever the animal made sudden or severe exertion. The mule was very wild, making examination of the parts im-

possible without casting. Having been confined on a very limited diet several days the mule was cast, and turned on his back. The tract, which would admit a lead pencil, was explored about ten or twelve inches, probably opening into the cœcum. We were somewhat undecided as to the best plan to pursue, but concluded to try scalding the walls of the tract with caustic. A cone of nitrate of silver was introduced and moved to and fro for about one half minute. The mule was released and returned to the stall. No bulky food was allowed, and but limited quantities of water, for several days. Nothing further was done. The tract healed promptly and kindly, and in a month the case was discharged as cured. A recent letter from the owner (Nov. 21st) stated that the mule has worked hard all summer and fall, and that the recovery seems to be permanent.

PUNCTURED WOUND OF THE CHEST.

By the same.

On May 28th, I was called to see an eight-year-old mare that had been severely injured the evening before. This mare and a gelding had been playing in a lot and had attempted to leap over a picket fence which formed the enclosure. She had failed to clear the fence, and coming down on it, a sharp picket had entered the thorax on the left side about the seventh rib. The picket broke off at the upper rail of the fence and a piece eight or ten inches long remained in the wound. A physician who happened to be near removed it. When called the next morning I found a wound entering the chest through which three fingers could readily be passed, and during each inspiration and expiration, the air rushed in and out of the chest. The wound was explored gently and a piece of the paling three inches long was removed. The pieces removed by the physician had been preserved and we were able to "reconstruct" the paling with the exception of some small parts which may have been lost.

The temperature was now 104° , pulse and respiration con-

siderably disturbed. The indications for recovery were certainly not very encouraging, and we decided to attempt treatment according to antiseptic methods.

The wound and surrounding parts were thoroughly washed with bichloride of mercury 1 to 1,000 parts of water. My impulse was to close the wound with stitches, but after some hesitation decided that perhaps drainage should be provided, so no stitches were employed. Several ounces of borated cotton were placed over the wound, and over this a large pad of oakum. These were held in position by a wide, double "many-tail" bandage of ticking and pressure increased by a surcingle.

The animal received salicylate of soda in doses of one drachm three times daily, and the best food and attention. Clean dressings were used daily. The wound responded kindly to our treatment, and in ten days had closed. No further dressings were considered necessary from this time except a light dusting with iodoform.

A very small scar is now the only evidence of the accident.

AN OUTBREAK OF TEXAS FEVER IN CATTLE.

By G. W. BROWNING, V.S., Huntsville, Ala.

Having had the opportunity of seeing several cases of the above disease during the past summer, I concluded to write a few notes to the AMERICAN VETERINARY REVIEW on the subject. The first case I noticed was on the 5th of July of last year, and from that date the cattle continued to die with the disease until no less than seventy-five or eighty had succumbed, and the malady lasted until the latter part of September, when we had a pretty good frost and then the disease ceased to exist. The tract of country where the disease existed, covered about four miles square, lying just out of the corporate limits of Huntsville. It is a low, flat land, having a white clay subsoil, or what is called crawfish lands, and lays outside, and there being no stock law in this county, nearly all the cattle from the city of Huntsville went out to feed on this vacant ground. Nearly all the cattle around here are of the Jersey breed, this being the

home of the noted Jersey cow Lilley Flagg, and we have as good Jerseys here as most anywhere one would strike. The first case I was called to see on the 5th of July, 1894, was a two-year-old heifer at the farm of Captain Milton Humes, who sent a messenger after me saying they had the murrain among the cattle out there and had lost three cows with it and another one down, and wanted me to go and see if I could do anything for it. On arriving at the farm and examining the animal, I found it lying in a comatose condition, with a temperature of 106° , and died in about two hours after my arrival. I held a post-mortem and pronounced it a case of anthrax, or Texas fever, as his cattle had been running out on the commons on the above-named territory, and was covered with ticks. I ordered him to separate the rest of the herd to an enclosed pasture he had, and wash with kerosene to rid them of the ticks, and he only lost one more, that was a two-year-old bull. I had him to burn the carcass and keep up the prophylactic treatment of the rest of the herd, which consisted in giving Glauber salts in drinking-water and feeding on green corn; but the majority of people having no pastures, continued to let their cattle run out on those low grounds after the cattle were dying with the disease. There being no State veterinary surgeon, or any law to control contagious diseases in the State of Alabama, all I could do was to order the carcasses burned and separated from this district, but there were very few who carried out my requests.

History.—The summer here was very dry and hot until the 1st of July, when it began to rain and overflowed the valley where cattle run, and I never witnessed a case of it till after the first rain that succeeded the long dry spell, and they continued to die one and two a day after that until frost, when they quit dying all at once. In a great many instances the animal would appear in perfect health in the morning and would be milked and turned out, and found dead before night. I saw several die as early as two hours after showing signs of the disease, and where death occurred, and that was in the majority of cases, none of them lived over the fifth day.

Symptoms.—The animal suddenly goes off its feed, rumination is suspended, the dorso-lumbar region is tender to pressure, a recumbent posture is almost constantly maintained, and what little time the animal is on its feet there will be rigors and trembling, but the standing posture is not long maintained; the heart beats with violence against the thoracic walls, the pulse is small, rapid and irregular, the conjunctiva red and injected; blood escapes from the nose; the eyes are sunk in the head and tears flow down the cheeks. The animal will sometime pass dark-colored urine; temperature ranges from 103° to 106° or 108° F.

Etiology.—The outbreak referred to I think was due to this part of the country being in the permanently infected district, especially the low ground mentioned, and the hot dry spell drying up all forage, followed by the rain causing the rise of the germs to the surface, heat and moisture being favorable to their development, and consequently spreading the disease through the medium of ripe ticks, flies and the like. On post-mortem, I noticed the following lesions: Nothing of importance was noticed about the skin; found considerable œdema of the subcutaneous tissue, which give a crepitus sound as filled with air. The lungs in some of the cases showed black hepatization, and a large amount of froth in them and bronchi. The heart contained petechial spots and the ventricles distended with black blood; the kidneys enlarged and containing considerable œdema around them; the spleen in all the subject I examined was greatly enlarged and full of black, thin blood; on taking it out of the body the blood would gravitate on holding it up from one end to the other; the liver was very much enlarged and of a pale color or sometimes mottled. I found more or less hyperemia in the intestinal track and mesentery veins very much relaxed and escaped black blood; bladder containing a small quantity of dark-colored urine.

Treatment.—As most of the cows belonged here in the city, I had them kept in a good airy barn, allowed them plenty of fresh water and thin bran mash for food and gave twelve to six-

teen ounces of glauher salts and commenced on the second day with chlorate of potass. 3 iii, quinine sulph. $\frac{3}{4}$ i. salycilic acid $\frac{3}{4}$ i (in a pint of water for one dose). This I repeated three times a day with ten minims of Fleming's tincture of aconite three times a day in the drinking water, but very few survived, only about 2% of the number.

THE HUMAN BODY CONSISTS OF NUMEROUS MAGNETS, GALVANIC BATTERIES AND ELECTRICAL COMBINATIONS.

By G. LEO HAGENBURGER, M.S., D.V.S., Brooklyn, N. Y.

1. *Human Magnets*.—The arms constitute a horseshoe magnet, the right hand being the North, the left the South Pole; the legs constitute another magnet; the toes and fingers a series of magnets. The human head, or brain rather, is a compound magnet, the most prominent North Pole being at the forehead, the principal South Pole situated at the occiput. The liver, spleen, with their nerve connections and blood-vessels, constitute as shown, a bar magnet, with the North Pole at the spleen, the South Pole at the liver; in other words, stronger electricities flow from right to left side, or justly opposite to the usual directions of magnet, electricities in the more external portions of the organism, which is from left to right. The right and left kidney also, the duplex portions of the sexual system with connecting tubes, nerves and vessels constitute electro-magnetics or magnets, and are simply kept in activity by the galvanic and other chemico and vital processes, which will be explained as follows:

2. *Galvanic Batteries and Polarized Centers of the Animal System*.—The brain being the great galvanic battery of the nervous system, its electricities being generated by numerous troughs and cells, as it were, its principal one being the spinal column, its larger cells, so to speak, the ganglia of the cerebrum and cerebellum; the smaller cells being the ganglia of the

sympathetic and sensory nerves, while conduction is carried on by the nerve fibres and nerves themselves. The heart, a very important organ (but very little understood by physiologists in the past), is the central galvanic battery for the vascular system in which a coarser grade of forces are brought into action, having electrical troughs in shape of veins and cells in the form of such centers of blood as the brain, lungs, liver, stomach, spleen, kidneys, etc. Wires in shape of capillaries, etc. It is exceedingly important the blood should be well supplied with vitalizing and active principles so that the electrical life ethers (the essence of all life) may be attracted briskly through all its channels.

3. *Chemical Composition Govern and Rule all Parts of the Body.*—We know and can prove that one important arrangement of chemical forces is caused by the union of the thermal color (red) with the electrical color (blue), and is exemplified in almost every function in the body.

Thus, the blue blood (venous) and the red arterial work together in the right and left side of the heart; the bluish white interior fibrous matter of the cerebrum lies right up against and interblends as I may call it, with the cellular reddish gray exterior matter of the same, and consequently this junction must be the point of the greatest and finest chemical activities from the part that the sensory nerves and from all parts of brain and body convey their forces there, hence it is deemed a true *sensorium*. When I say this, I, of course, don't wish to infer that thought, sensation, consciousness, etc., result merely from chemical action, but from a spirit as a quickening principle.

(See Barter's Chemistry and Phisic's Spirit, Matter, Force, as the Three Factors in the Universe), in connection with chemical action.

1. *The Bluish White Corpuseles.*—Collosum lies against the reddish gray superior ganglion F, which in turn lies against the great inferior ganglion E. The cerebellum L, like the cerebrum M, M, has reddish gray cellular matter on the outside and with bluish on the inside, although this white interior is interspersed with reddish gray in a way as to resemble a tree, and

hence called the arbor vitæ (or translated from Latin the "Tree of Life"). The spinal cord ends off at the top with the medulla oblongata A, which is bridged over and above with the pons varolii B, and all *three* of these reverse the order of the brain, having the colder bluish white on the exterior and the reddish gray on the interior. From each ganglion of the great sympathetic nerve, that runs along on the whole interior system near the spine, two nerves pass to the spinal nerves, one large and reddish gray, the other bluish white. The latter are those of sensation; the reddish gray are those more directly of motion.

It is quite common for the interior portion of the sympathetic ganglia to be yellowish gray, instead of reddish gray, so it may be supposed that some violet elements must co-operate with such.

Thus we see all through this little explanation, there are through the system the bluish white elements answering in the place of the zinc plates in the galvanic battery, and the reddish or yellow elements answering to the copper plates in the battery.

In this manner we get a brisk play of fine ethers through chemical action, so the system is kept full of heat and life. Even the serous and synovial membranes having a certain amount of acid (electrical in character), while the mucous membrane, or more alkaline (or thermal in character), and this adds quickening principle to the whole system. (This I have proven to my own satisfaction regarding the poles and on the principles of light and color).

4. *Philosophy of Sensation*.—So far has been proven that electrical and thermal forces rule everywhere throughout nerves, arteries, veins, tissues, etc., and that even those spiritual forces (so little known in physics) underlie and arouse, as I may term it, the whole work in perfect harmony with chemical law, which always requires two factors: *electricity or cold, thermism or heat*, as contrasting forces to produce effects and actions. But our physiologists deny positively that nerve force is not electricity. And why? Because it will not move the galvanometer. This

comes from the fact that some of them are ignorant of the whole nature of electricity, so *far as basic* principles are concerned. For example, some of them have not learned that electricity consists of many grades, a multitude I may say, and that the coarser grades are mainly used in galvanic or frictional electricities. The finer or vital and psychic electricities or ethers can no more be measured by the aid of the galvanometer than the heat at the South Pole can be by the thermometer.

In order to produce conscious sensation, the nervous ethers must necessarily pass and make a complete circuit, passing from the point of the body affected through the sensor nerves to the brain center, and back through the motor nerves to the starting point. *Motor nerves*, when acting normally, always carry these fine ethers from the brain and *sensory nerves* to the *brain*. You may ask why do not these ethers which produce sensation cause contraction of the muscles if they come back through the motor nerves? Because to all evidences then the sensory forces are more strongly *thermal than electrical*, and heat of course, as we know, cannot contract anything, but expands. Sensory nerves, like motor nerves, have channels for heat and cold forces, both showing a quality in all things in the universe. To make this law of sensation clearer, let us for example, prick the end of our finger. For two reasons sensation is keener there than elsewhere :

1. The tactile corpuscles are abundant.
2. Electrical tension is always greater at points (a very important factor to be remembered in modern surgery).

The prick or impression made will send the ethers excitedly along the sensory nerves of the forearm to the brachial plexus and spinal column. Just before the latter they will be fired up anew by passing through the ganglion at the post root or spinal nerve. But physiologists claim they have discovered that after reaching the spinal column some of the sensory fibres pass on up to the brain, while others on the contrary pass downward along the spine and thus deflect the currents, so they reach the original starting point and cause sensation there and not at the

brain. In producing a galvanic current it is known that the principal irritating sensation does not result from the positive or efflux pole, but at the negative, and where the forces strike after completing or nearly completing the circuit. Hence, if the sensor currents should stop at the brain or the gray matter, it would be felt there and not at the starting point. In such a case terrible and dangerous wounds may be inflicted upon human subjects or animals, and we should not and would not know by feeling or sense of feeling where to locate them. If we should take the effect of the nerve forces to the spine and not to the brain we should have unconscious sensation or at least a very indefinite effect of it.

5. *The Functions of the Special Senses of Sight, Touch, Hearing, Taste and Smelling* all excited by the aid of thermal and electrical currents of the animal organism working simply in harmony with chemical law. The most refined of these, the sight, is acted on by ethers only; hearing, the next, is produced by means of ethers and atmospheric gases. Smell deals mainly with gases; taste with liquids or semi-solids and touch, last of all, with solids, liquids, gases and ethers. (This shows a coarser grade as seen in atomic principles in electro-physics of modern date).

The organ of sight deals with luminous ethers in the form of liquid and colors, through the medium of which everything in the universe is revealed to man. Scientists have shown us that the retina contains thermal elements which attract by the same law and receive chemically the electric colors of light and also contains electrical elements which receive and appropriate the thermal rays of light. Hence the blue elements in the retina receive the red rays; the red elements receive the blue rays; the violet elements receive the yellow rays, and so on; in this way these luminous ethers send their impressions upon the brain proper which produces the wonderful phenomena of vision.

Herr Salzer estimated in an essay before the Vienna Academy of Sciences several years ago that there are 438,000 nerve fibres and 3,360,000 retinal rods and cones in the human eye.

Hearing, as we know, is accomplished by the air waves ordinarily striking at the tympanum and especially by electrical and thermal ethers which go far beyond the tympanum into the interior portion of the ear sent forward by vibratory motion in connection with gases, liquids, sounding boards until the cochlea is reached, the presiding genius and its impressions are conveyed to the auditory nerve and then to the sensorium.

The wonderful scales of the cochlea, consisting of about 3,500 outer and 5,200 inner rods of Corti (not according to my finding them in the dissecting room,—I quote this from Flint), constitute 8,000 cords of constantly increasing lengths, so that every grade of musical tone can have an answering element that shall communicate to human consciousness an exact perception of pitch.

The fact that sounds can be communicated to an ear which is under water, or telephoned 100 miles, shows that sound does not simply consist of air waves, but of a finer and swifter etherial fluid, although the air is a necessary assistant in the process and can modify its waves as well as its musical tones.

The sense of smell deals with gases, and yet we find on these gases are bourne the minute particles of various substances such as emanations from flowers, ammonia, aromatic plants, diseased tissues, etc. The particles flying in the nasal passages find their peculiar chemical affinities in the mucous membrane of epithelial cells, where they are attracted, and the impression is carried on to the olfactory N, which has three roots side by side, the middle one being reddish gray, the outside one being bluish white.

The sense of taste is generally supposed to be perceived by the pappillæ of the tongue—different varieties on the upper side. By experiments, however, you can prove to yourself that fruits or edibles can give but a feeble taste unless they are converted into a fluid at first, or semi-fluid at least, and then pressed between the tongue and the roof of the mouth. For example, take a cherry or grape and break the skin so that the juicy pulp comes against the tongue, while the unbroken part comes against the palate and the peculiar taste of the fruit is entirely wanting; and

why? Because the electrical circle is broken and the skin of the fruit acting as an insulator prevents the current passing from the tongue to the roof on its way to the brain, and back again to the tongue (a complete circuit).

This explains the reasons why food must be changed into liquids before we can get its full taste, as liquids are better conductors than solids are. To prove to yourself that sensation of taste may be caused by electricity, place a silver coin under the tongue and a copper coin above it, and then allow the edges to meet, so that the circuit may be complete, and sensation will occur immediately. On the tongue we find three general sizes of pappillæ, the large circumvallate, few in number, the medium-sized fungiform and the smaller or conical and filliform. From what we know of chemical affinity we may conclude that the redder portion of the tongue, such as the fungiform pappillæ, will attract to themselves the blue elements of food, such as acids and other cooling properties; on the other hand, some of the smaller pappillæ will be observed to have a pale or bluish cast and these would naturally attract thermal elements, such as carbons, alkalies and sweets, peppers, etc. When the taste is not perverted from a love of artificial stimuli and over rich diet, the chemical forces of the system will generally call for such foods as are most needed and the demands of nature should be heeded. Food that is wholly unpalatable will not call forth sufficient saliva and digestive processes properly, and so nutrition is not carried on as completely when otherwise. Hence you find subjects that are opposed to certain foods for no apparent cause or reason to themselves, simply a chemical law.

The sense of feeling or touch is explained under the head of sensation.

Summing up all I said I wish to state further that all the senses, in short all the functions of the animal organism are carried on as well as the process of life through the activity of unimpeded flow of vital ethers, both electrical and thermal, and therefore we have to learn something not universally taught in medicine, how to keep the system charged with said require-

ments as found in nature, best, plain and simple, to treat disease which is either due to an excess of electricity or thermism, or a lack of thermism or electricity in the system, and hence the one thousand and one symptoms noticed in disease as a consequence of the same. Not until such times we recognize basic laws as a principle everywhere, can we fully recognize the cause of disease and scientifically fight its removal. And I feel sure that many obscure diseases to-day will in the future be explained through and only by basic principles. The introduction of electrotherapeutics in veterinary medicine should be encouraged and studied by every veterinarian, and I am sure facts will be brought out in the future which justify the means. My experience is yet limited to enumerate many cases as I first now begin to realize, after a few years of study, that I can get better results from their application in almost hopeless cases, than I can from nerve medicines and toxic agents, which if administered will probably give quick results, but of a short duration in my experience, but so disastrous, especially on the nerve centers, by their powerful reactions which they produce. I will mention some cases later on; all I ask is to give me your kind consideration and give the matter a careful study in the future, as I am sure it will mean with you, the same as with me, better results and less dead horses, and more humane treatment to our equine friend and a little more satisfaction to our clients at times.

Thanking you kindly for your indulgence with me, probably to some a very trying subject, but it outlines a few remarks, experimental in character, underlying a great truth.

THE REAL VALUE OF THE MEDICINAL PEROXIDE OF HYDROGEN PREPARATIONS FOUND IN THE MARKET.

By H. ENDEMANN, PH.D., Chemist,
(Formerly with the Health Department of New York City.)

My attention having repeatedly been called to several reports and analyses made by different chemists and published by some medical journals, I concluded to examine all the brands of per-

oxide of hydrogen which I could find on the market, in order to ascertain the real value of each when intended to be used as an antiseptic remedy, both internally and externally.

The reports on the subject which have come to my knowledge are quite contradictory, and my object is to impart to the medical impression the results of my experiments, which have been made on fourteen fresh samples, purchased by me in duplicate, directly from the manufacturers or their selling agents.

These brands have been tested for the volume of available oxygen, the amount of residue, the degree of acidity, and the amount of soluble baryta salts contained therein, as per following table :

BRANDS.		Volume of Available Oxygen, determined by means of a solution containing 5.665 Grammes of Permanganate of Potash per liter of distilled water.	Residue obtained from 100 C. C. of Peroxide of Hydrogen dried at 120 degrees C.	Acidity expressed in Cubic centimeters of Normal Volumetric Soda Solution for 100 C. C. of Per.	Baryta found in Soluble Baryta Salts contained in 100 C. C. of Peroxide.....
No.	1. John Bene's Peroxide of Hydrogen Medicinal....	10.50	0.1886	2.19	None
"	2. Hydrozone.....	27.35	0.2180	3.11	None
"	3. Larkin & Scheffer's Peroxide of Hydrogen Medicinal.....	9.65	0.1206	6.75	None
"	4. Mallinckrodt's Peroxide of Hydrogen Medicinal..	9.55	0.1408	1.43	None
"	5. Marchand's Peroxide of Hydrogen Medicinal....	16.55	0.0564	1.29	None
"	6. McKesson & Robbins' Peroxide of Hydrogen Medicinal.....	10.95	0.0540	0.44	None
"	7. Merck & Co.'s Peroxide of Hydrogen Medicinal...	0.50	0.2418	4.57	None
"	8. Oakland Chemical Co.'s Peroxide of Hydrogen Medicinal.....	10.50	0.0382	0.34	0.0017
"	9. Peuchot's Peroxide of Hydrogen Medicinal....	10.60	0.4674	1.77	0.0018
"	10. Powers & Weightman's Peroxide of Hydrogen	8.40	0.0830	2.03	None
"	11. Pyrozone, 3 per cent.....				
"	12. Rosengarten & Sons' Peroxide of Hydrogen Medicinal.....	11.20	0.0534	0.76	None
"	13. Smith, Kline & French Co.'s Peroxide of Hydrogen Medicinal.....	3.10	0.1002	0.25	None
"	14. E. R. Squibb's Peroxide of Hydrogen Medicinal..	6.15	0.088	2.6	None
		12.40	1.004	12.04	None

By referring to this table it is easily understood that sample No. 2, "hydrozone," is far superior to any other brand which has ever been made, not only on account of its containing a much larger amount of available oxygen, but also owing to the presence of a small quantity of several essential oils, the respective nature of which could not be determined, very likely because they have been submitted to the oxidizing action of peroxide of hydrogen before being used to make "hydrozone."

I attribute to this small quantity of essential oils the great superiority of hydrozone over any other brands of H_2O_2 as a healing agent.

When hydrozone is diluted with distilled water, in the proportion of half and half, the resulting mixture contains about 13.5 volumes of available oxygen, and its bactericide power still remains the same as the bactericide power of sample No. 5, which contains 16.55 volumes of available oxygen.

Sample No. 14 comes next to sample No. 5, but it is readily seen that the degree of acidity is entirely too large for a preparation which is to be applied to the most sensitive diseased mucous membranes.

Sample No. 11, called "Pyrozone," which contains 11.20 volumes of available oxygen, is quite similar to sample No. 6, with the exception that the latter contains a small quantity of salicylic acid. Very likely the salicylic acid has for its object to increase the bactericide power, but, unfortunately, I fear that it impairs the keeping properties of this preparation.

Acidity.—The fourteen brands which I have examined contain free acids (phosphoric, sulphuric, muriatic), and I must say that peroxide of hydrogen medicinal should never be made neutral before using, even in the most delicate cases. Neutral peroxide of hydrogen rapidly decomposes under all conditions of exposure.

The keeping properties of H_2O_2 solutions vary a great deal with the degree of purity and the percentage of free acids contained therein.

If the proportion of acid is too large, the preparation will

know that it acts as an irritant upon diseased surfaces. If it is too small, the solution don't keep well.

My opinion is, that a standard solution of medicinal $H_2 O_2$ must answer the following tests :

1. It should contain at least fifteen volumes of available oxygen.

2. The quantity of free acids contained in 100 cubic centimeters should require not less than 1 c. c. and not more than 3 c. c. of normal volumetric soda solution, to be made neutral. Such a small quantity of free acid is not objectionable.

3. It should not contain any soluble baryta salts.

4. It must be free from sediment.

It is to be noticed that the brands No. 7 and No. 12 are valueless.

The brands No. 8 and No. 9 are not fit for medicinal uses, owing to the fact that they contain traces of soluble baryta salts.

The brand No. 3 has a heavy sediment of sulphate of baryta; which may be considered inert towards the system, but it is certainly detrimental to the keeping qualities of this preparation.

Brand No. 14, which is sold as a ten volume solution, is really twelve volumes, but it is too acid. Brand No. 5, which is sold as a fifteen volume solution, is really 16.55 volumes, viz.: About ten per cent. above the standard.

The brand No. 2, which is sold without any mention of volume, is really a 27.35 volume solution, viz.: Ninety per cent. above the standard.

None of the other brands come up to the standard, but on the contrary they run from 35 to 55 per cent. below.

CORRESPONDENCE.

DR. SALMON REPLIES.

Editor AMERICAN VETERINARY REVIEW.

DEAR SIR :—In a letter published in the December number of the REVIEW, Dr. Schwarzkopf does me the honor to use my

name in connection with his comments on certain editorial paragraphs which appeared in the issue for the preceding month. Is it not surprising that the doctor should throw off the discreet silence which he preserved so successfully at Philadelphia, when he had my remarks before him for a text, and now return to the subject when his only incentive is two short paragraphs, which the writer possibly thought were brilliant, but which most readers probably regarded as rather stupid?

The paragraphs in question were apparently intended to be witty, and the humor I have no doubt was aimed at me, but Dr. Schwarzkopf is evidently not yet sufficiently familiar with the English language to catch the subtle meaning which the author expected they would convey. He has consequently mistaken an ally for the enemy, and, without waiting to investigate, has opened up with his artillery at long range.

With the remarks directed at the paragrapher I have nothing to do, but concerning those aimed at me I may be permitted a few words. It is stated that "when anybody attacks the United States meat inspection service Dr. Salmon's patriotism gets immediately aroused, and he violently throws mud at the foreigners."

As to the charge of mud throwing I must enter a disclaimer. The doctor has again apparently failed to grasp the meaning of our American expressions. It is true that when one gentleman asserted we had no professional inspection of meats in this country, I demonstrated the contrary by pointing to the Federal meat inspection service, composed of inspectors and assistant inspectors, all veterinarians, and all under the civil service regulations. When certain high German officials returned to their country after visiting the Columbian Exposition, and reported that there were only two microscopists engaged in inspecting pork at Chicago, I was able to disprove their statements by exhibiting the bureau pay-roll for Chicago, which shows the constant employment of from fifty to ninety persons in the microscopical inspection from the time this service was inaugurated to the present.

And when certain alleged Americans, of German extraction, have dilated upon the perfection of the German meat inspection service and the weakness of our own, it has afforded me exquisite pleasure to point to the fact that there are many times the number of cases of trichinosis in man reported in Germany from the use of their inspected pork than are recorded in this country from eating pork which has never been inspected. Also that in Germany, although they have inspection, they continue to eat the flesh of animals affected with advanced actinomycosis, tuberculosis, pleuro-pneumonia, and various other diseases, as well as pregnant and parturient females, which, if an inspector passed in this country, and it became known, would cost him his position.

With these facts before me I have asked the question: Why this elaborate inspection system of Germany if it neither prevents trichinosis nor condemns the carcasses of diseased animals, except in the most extreme cases, in which the consumer himself would probably reject the meat?

This, however, is not throwing mud, in any recognized acceptance of the expression. It is simply stating the facts. And I am sure the plain facts are sufficient to establish the point which I had in view.

Finally, as to my alleged failure to exhibit that patriotism and pride in the profession in our own country which the doctor expects from me, and my championship of a dying cause, this opinion would be most distressing to me were it not all due to his having been again led astray through failure to grasp the situation and the language.

My remarks at Philadelphia were intended as a protest against the insufferable egotism and effrontery of a few over-zealous gentlemen who, having been elected to membership in a society composed very largely of two-year men, went out of their way at that meeting to denounce such men as little if any better than quacks. I am not a graduate of a two-year school, but I have long been a member of the United States Veterinary Medical Association, and if I held such views as were expressed

in regard to my associates, or so much as gave assent to them by my silence, I should consider it my duty to resign at once.

Those of us who have long worked for the advancement of the veterinary profession in this country, and have watched its growth and development for a quarter of a century, *know* how much has been done by the two-year schools and the two-year men. And speaking for myself, while I shall encourage and assist all honest and legitimate efforts to improve the course of instruction, I shall not encourage the idea that any particular institutions have a right to monopolize the veterinary education of the United States. Further than this, I do not believe that either the stock owners or the veterinarians will be benefited by an attempt to force an arbitrary extension of the course of instruction before the country is ready for it. We still have large stock raising districts where the veterinarian is unknown, and where it is asserted he could not make a livelihood. But this was said a few years ago of sections where veterinarians are now doing well. Pioneers entered the field, educated the people to the value of veterinary assistance and developed new fields for the profession.

If the fields which now remain unoccupied have not been found profitable for the man who has given only two years' time, and the fees of two courses of lectures for his professional education, will they be profitable for the graduate whose course has cost him fifty per cent. more than this in both time and money?

There are official positions and fields for practice in cities and in the richer stock raising districts which the three-year man can occupy with profit, but there are many others in which he would not get a dividend upon the expense of his education. Is it not reasonable to suppose that, during this transition period, there may be a mission for both the two-year and the three-year schools?

We have most excellent men in the profession who have graduated from two-year schools, and at a time when the requirements at these institutions were much less rigid than they should have been. Why this sudden denunciation of two-

year schools, *per se*? Why this demand for an immediate and arbitrary extension of the course all along the line at a time when the value of horses has depreciated to an alarming extent, and when there is an unexampled depression in business of all kinds?

The two-year schools have never been brought to perfection. There has always been abundant opportunity to strengthen the faculties, improve the methods and advance the entrance examinations. Would not improvement of this character benefit the profession as well as an extension of the time, if the faculties, methods and requirements for admission are to remain the same. There can be no doubt of it; but this plan of advance apparently has no attractions for the gentlemen who are proclaiming themselves as the repositories of all the progressive tendencies, all the professional pride, all the unselfishness, and all the wisdom in the profession.

Instead of opposing the three-year institutions, I am most happy to see them established; indeed, I should be enthusiastic over them had not their promoters shown such an intolerant spirit and a scarcely concealed determination to crush, if possible, all competition. The graduate of a two-year course is not necessarily inferior to the graduate of a three-year course; this depends partly upon the institution and partly upon the student. There may be some institutions which could not turn out a competent practitioner, after a six-year course, for the very reason that a faculty cannot very well teach that which it does not itself know. Consequently, a practitioner's competency should be measured by the examination which he can pass, rather than by the fact that the college from which he graduated has a two or three-year course.

I regret that a comparatively few gentlemen, whose experience in the work of building up a profession is in inverse proportion to their zeal, are likely to injure a good cause by going to extremes in language and measures. There have already been too many attempts by veterinarians in this country to build up certain individuals or certain interests by pulling others

down, and so far as my observation extends this course has generally reacted against the movers, and, unfortunately also, against the profession.

I hope that the gentlemen who are so much interested in my position concerning this matter will see, from this plain statement of my views, that I am not opposing the advancement of veterinary education, or in any sense posing as the champion of a "dying cause." My efforts are now devoted, as they always have been, to the elevation of our profession and the improvement of our science by a steady, normal process, which is much more certain in its results than any attempt to reach the objective point at a single bound, and especially so under the present unfavorable conditions.

D. E. SALMON.

SURGICAL TREATMENT OF PERIODIC OPHTHALMA.

December 27, 1894.

DEAR DR. LIAUTARD:—I notice in the November number of the REVIEW the report of the United States Veterinary Medical Association meeting, held in Philadelphia, in which I see that the paper I read at Chicago was discussed. After which it stated that the sense of the meeting was "a general lack of approval seemed to prevail as to the wisdom of performing a paracentesis for the disease."

Will you kindly ask in your REVIEW how many, especially of those who discussed the wisdom of the operation, ever saw the operation performed on the human or equine eye, or ever operated themselves? To condemn or censure a new surgical procedure, without having had any experience in the matter, is not what the modern veterinarian should do.

To elevate the profession, of which I hear so much among veterinarians, is in this age of progress and enlightenment, not to cavil at anything *new*, but try and improve on any suggestion made.

Many an operation and invention has been scoffed at by educated men, for the simple reason that they were too narrow

to get away from the narrow rut of their own self-conceit, and men eminently desirous that no one else traveled in any other way than theirs.

I have had but one inquiry about the operation from Australia, and it would seem that there is a better method of treating this disease, of which I would like very much to know.

The Western veterinarians are very desirous of having the next annual meeting of the United States Veterinary Medical Association held at Des Moines, Ia. What do you think of it?

I believe it should be a *United States* Association, and not confined to one section of the country too often.

With this allow me to extend to you the season's greeting.

Yours, very truly,

R. H. HARRISON.

Editor AMERICAN VETERINARY REVIEW.

DEAR SIR :—On November 13th, Drs. C. A. Cary, A. H. French, S. F. Mussleman, and Geo. C. Jolly met at Hotel Gatalas, in the City of Montgomery, and organized an association, and adopted a constitution and by-laws, and elected the following officers ;

President, C. A. Cary ; Vice-president, S. F. Mussleman ; Secretary and Treasurer, Geo. O. Jolly.

The name of the association is, "Alabama Veterinary Medical Association."

We have every reason to feel encouraged over the progress we are making, as we are sure all the veterinary graduates in the State will join us as soon as our Constitution and By-laws are printed.

Yours truly,

GEO. O. JOLLY, *Sec. and Treas.*

COLLEGE COMMENCEMENT.

ONTARIO VETERINARY COLLEGE.

The Christmas examinations of this institution were concluded on Friday, December 21st.

The Board of Examiners, which is appointed by the Board of Agriculture and Arts of the Province of Ontario, subjected the aspirants for the diplomas which they grant, to the examination.

The following gentlemen were successful in passing the ordeal: Nelson Ball, Auburn; David H. Coleman, Philadelphia, Pa.; Robert Cunningham, Thorndale; George H. Dunn, Erie; John T. Elliott, Uxbridge; John H. Engal, Milverton; Louis Friedheim, Rock Hill, S. C.; William H. Funston, Toronto; G. W. Harrison, Souris, Man.; Dan Hisey, Creemore; John D. Irvine, Dalkeith; George Jemison, North Bay; John T. Kiethline, Jenningsville, Pa.; Robert A. McAfee, Aylwin, Que.; John H. Macdonald, Wiarton; S. Gordon Sawyer, Boston, Mass.; J. Herbert Snider, Guelph; Wilson Swenerton, Wawanesa, Man.; Benjamin Thomlinson, Clinton; Farnell Whybra, Niagara Falls, N. Y.

Primary Examination.—Arthur P. Freeman, anatomy and materia medica.

SOCIETY MEETINGS.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

MILLERSBURGH, O., Sept. 26, 1894.

In accordance with an understanding arrived at at our last annual meeting, the Ohio State Veterinary Medical Association convened for its eleventh semi-annual session in the city building of Millersburgh, Holmes County, O. The meeting was called to order at 7:30 P.M., September 26, 1894.

An address of welcome to the association, and in behalf of the city, was delivered by Judge W. Stillwell. The address was an excellent one, pithy, practical, and not lengthy. It was responded to in behalf of the association by our President, Dr. J. D. Fair, who in a few well chosen remarks thanked the visitors and city officers for their kind wishes, etc.

The roll being called, showed a goodly number of members to be present, besides Dr. C. L. Chase, Dr. L. P. Beechy, Dr. J. Yoder, Dr. O. W. Everly, Dr. Broomter, Dr. Caughey, Dr. Krider, Dr. W. C. Fair and Dr. H. Fulstow as visitors.

Dr. J. C. Meyers, Sr., of Cincinnati, now read an interesting paper, describing deaths due to some disease, and entitled his paper "Is it a Vegetable Toxicum."

The essayist described several deaths in a single herd of cattle, in each of which death followed a certain train of symptoms, and ask the question as per the title of his paper.

Dr. W. C. Fair had had considerable correspondence with farmers, describing almost parallel cases, and he judged them caused by the feeding of improperly cured corn fodder.

Dr. Torrence asked if the disease was confined to one farm, and did the cows in calf abort.

Dr. Meyers had no report of the cows aborting, and said the disease was confined to one farm.

Dr. Meyers asks if any present had had any experience with cornstalk disease.

Dr. Cotton had heard much of the so-called cornstalk disease, but he had never had the pleasure of seeing it. He had been called to see three horses with very much the same symptoms as described, found two dead and the other nearly so; he had examined pasture and could find nothing wrong, only that the owner had thrown out seven or eight tons of partially spoiled ensilage. Held post-mortem and could not tell cause of death. His theory is that a fungi (ferment) propagates on the corn fodder, and it becomes poisonous.

Dr. Gribble had been called to see a herd of polled Angus cattle in which eight of about twenty died with symptoms similar to those described by Dr. Meyers. There were three herds in three different fields, the same creek watering all three; all were fed clover hay from the same stacks and corn and fodder from the same field, yet none died only in the one field; on examination the only difference to be found was that the field where the cattle died contained three piles of threshed timothy

hay—could not call them stacks as no care had been taken with it. The timothy when harvested had a short thick growth of green grass which was cut with the hay and was covered with a mold at threshing time. These stacks were burned and no cattle died afterwards.

Dr. Torrence: "Do not almost all cattle having impaction of rumen, or other stomach troubles, suffer with different degrees of paralysis due to reabsorption of grasses?"

Dr. J. D. Fair had seen two outbreaks of a disease showing similar symptoms, which were both due to feeding, bad ensilage, thrown about in feed troughs.

Some present thought the disease diphtheria, and tried to show the analogy.

The new veterinary bill, as it passed the Ohio Legislature, was now read and discussed, not one present being satisfied with its exactness, especially when all the good clauses of the original draft of the bill had been left out of it when it became a law; and that it was probably very little, if any; better than no law at all. A decision from the Attorney-General was read, wherein he stated that according to his rendition of the law the examiners would call any graduate before them for examination, no matter how many years he may have been in practice. This decision was thought to be very unfair, as none could see where, and in what section, the law conferred any such powers upon the board of examiners; so much so that the association decided to support any member in a legal test, if the board of examiners should undertake to assume such a power.

Dr. T. B. Cotton now read a paper entitled "Veterinary Dentistry."

This paper was well prepared, both from a scientific and practical standpoint, showing that the writer had exercised considerable care and study of the subject written on.

Dr. Torrence: "When there is a long molar tooth below, necessitating its being cut off, the opposite molar should be extracted."

Dr. Cotton: "No, do not do so unless you have to, because,

in my experience, you have so much trouble with the cavity by its continual filling up with food, so never extract unless they be loose."

Dr. Gribble had extracted lower molars when cutting off would have been better. In two cases continued filling with food prevented healing and ended by having fistula of jaw.

Dr. Beechy knew a case where molar was extracted more than a year ago, yet still a foul smelling discharge from the nostrils.

Dr. Cotton thought caries teeth affected the eye, and he had seen caries wolf teeth.

Dr. Derr had a wolf tooth which he had extracted from a five-year-old horse, and the tooth was sickle shaped and over three inches long.

Dr. W. C. Fair thought the teeth of cattle were sadly neglected, as he had found many; when the teeth were attended to they were relieved at once; he, in fact, believed that cattle suffered as much from disorders of the teeth as did horses, the same ages considered.

The general verdict sustained Dr. Cotton in not extracting molar teeth unless compelled so to do.

Meeting now adjourned to meet to-morrow morning at 8:30.

THURSDAY, Sept. 27, 1894.

Meeting called to order at 8:45 A. M., by President Dr. J. D. Fair.

Dr. H. Fulstow, of Norwalk, O., applied for admission to membership. He is a graduate of Ontario Class, 1892, and was unanimously elected, after which he thanked the association in a few well-chosen remarks.

S. G. Reed, having quit the practice of veterinary medicine, asked to withdraw from membership; the same was granted. Considerable correspondence was read, some of which was severely criticised, as the writer wrote of matters concerning the association, in which he showed himself ignorant of what he wrote about.

Dr. C. L. Chase now read an essay, "Value of Post-mortems." The writer plainly showed to every practicing veterinarian the great value of post-mortems, and should be taken advantage of much oftener than it is.

Mr. King, who claimed himself an expert on ridgling castration, made a few remarks in reference to his method, and the per cent. found of true ridglings. He stated about one in eight floated in the abdomen.

Dr. Gribble, who had had some experience in castration, was asked what per cent. he found floating in the abdomen, and his answer was, only four in fifty-four, so-called ridglings.

Dr. Derr had met with only three in sixty.

The Holmes County Fair was in progress, and all were invited to attend during the afternoon.

Dr. Derr offered a resolution that was supported by Dr. Cotton, viz., that the president and secretary be empowered to issue orders in the payment of all bills relating to this session.

The association then adjourned to meet in Columbus during January, 1895.

WM. H. GRIBBLE, D.V.S., *Secretary.*

MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION.

The monthly meeting of the Massachusetts Veterinary Association was held on September 12, 1894, at 19 Boylston Place.

The members present were Drs. Becket, Burr, Towle, Howard, Labau, McKenna, Osgood, Parker, Winchester and Winslow. Honorary member, Dr. Stickney. The chair was taken by Dr. Burr at 7:45 P. M.

The minutes of the last meeting having been read, Dr. Winslow moved that they be accepted as read; seconded by Dr. Howard. Carried.

The secretary then read the report of the committee on tuberculosis. Dr. Winchester moved that the report be accepted; seconded by Dr. Osgood. Carried.

Dr. Winchester then said he had looked over report, and thinks it covers the ground; the points are well taken. He thinks it should be published in journals, and he sees no reason why it should not be adopted and published.

Dr. Howard thinks it is pretty complete, and should be published in the agricultural papers.

Dr. Burr then suggested that the report should be considered in parts.

Dr. Osgood was of the opinion that the matter of disinfection should be treated a little more fully.

After some further discussion Dr. Osgood moved that the report be printed and copies mailed to the members of the association, and the matter brought up at the next meeting; seconded by Dr. Stickney. Carried.

Applications for membership were then received from Dr. James T. Fisher, 98 Moreland street, Boston, Dr. Henry Lewis, Chelsea, and Dr. H. B. Hamilton, Albany street, Boston. The names of Dr. Lemuel Pope, Arlington Heights, and Dr. J. H. Walker, Taunton, were then brought up, and as no applications from them had been received, the secretary was directed to forward application blanks to them.

The Committee on Credentials then reported favorably on the names of Drs. Lewis and Fisher.

New Business.—Dr. Burr then called attention to the fact that members of committees are sometimes compelled to travel long distances to attend committee meetings, and he suggested that Dr. Paige be remunerated for expenses incurred in attending committee meetings in Boston. After considerable discussion the general opinion seemed to be that it was not advisable to establish a precedent by paying the expenses of those attending committee meetings.

Dr. Osgood then moved that this meeting be considered the regular September meeting of the association, and that the regular meeting of the association be held on the fourth Wednesday of each month; seconded by Dr. Labau and carried.

Dr. Osgood gave written notice that at the next meeting he

would propose an amendment to the Constitution to provide for special meetings.

Dr. Parker called attention to the meeting of the United States Veterinary Medical Association in Philadelphia, and asked that the association should appoint delegates to attend the Philadelphia meeting.

Dr. Osgood moved that all those attending the meeting should be appointed as delegates; seconded by Dr. Parker. Carried.

The matter of spaying cows was then brought up for discussion by Dr. Osgood reading a letter relating to the spaying of cows. He has been doing a good deal of it lately, and so far the results have been satisfactory, although the time has not been sufficiently long to give the matter a thorough test. He has spayed about forty cows. In his experience cows are apt to gain in flesh unless carefully watched, and where they gain in flesh and get fat, the feed should be dropped.

After some further discussion the meeting adjourned.

JOHN M. PARKER, *Secretary*.

MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Association was held at No. 19 Boylston Place, on Wednesday, October 24, 1894, at 7:30 P.M.

The members present were Drs. Bunker, Emerson, Howard, Labau, Osgood, Parker, Rogers, Winchester and Winslow. Dr. Winchester occupied the chair.

The minutes of the last meeting having been read and adopted, the chair called on Dr. Howard, as one of the delegates to the United States Veterinary Medical Association meeting, in Philadelphia, to make his report.

Dr. Howard made an interesting report of the meeting. He referred to the report of the Committee on Education to Dr. Hagar's paper on "Neurotomy" or "Neurectomy," and to the papers on "Tuberculosis" as being especially interesting. In

reply to an inquiry, he stated that the Comitia Minóra recommended the expulsion of Drs. Lee and Becket, in consequence of their having sent out illuminated calendars. The association finally decided to call the attention of Drs. Lee and Becket to the matter, so that they might have an opportunity to defend themselves.

The meeting closed on the last day with a most enjoyable visit to the Veterinary Department of the University of Pennsylvania, to the hospital of Dr. Horace Hoskins, and to the Zoölogical Gardens, finishing with the dinner at the Colonnade Hotel.

Drs. Winchester, Osgood and Parker all reported having enjoyed the meeting very greatly.

Dr. Parker then reported for the committee on tuberculosis; after considerable discussion the report of the committee was accepted as one of progress and certain changes were advocated in the report.

The names of Drs. James T. Fisher and Henry Lewis were then voted on, and unanimously elected to membership, and the names of Drs. H. B. Hamilton and Leonard Pope were reported on favorably and laid on the table for action at the next meeting.

New Business.—The secretary then read a letter from Dr. Lee, resigning from membership in the association. Dr. Winslow moved that the resignation be accepted. Dr. Bunker moved an amendment "that Dr. Lee's resignation be laid on the table, and the secretary instructed to write to Dr. Lee, asking him why, in the event of his resignation not being accepted, he requests to be expelled." Seconded and adopted.

Dr. Osgood then brought up the matter of special meetings, and after some discussion Dr. Bunker made the following motion: that "special meetings can only be called by the president or upon written application of three or more members, or by vote of the association." Seconded by Dr. Osgood, and carried unanimously.

Dr. Osgood then informed the association that in consequence of the generosity of Messrs. Hemenway, of Boston, and

Morgan, of New York, Harvard Veterinary College is now enabled to do away with the subscription plan.

After some further discussion Dr. Bunker offered a resolution approving of their action, and by vote of the association the consideration of the resolution was laid over till the next meeting.

There being no further business the meeting adjourned till November.

JOHN M. PARKER, *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

A very interesting meeting of the Keystone Veterinary Medical Association was held November 13th at No. 3452 Ludlow street, Philadelphia, with President Lintz in the chair.

Those answering roll-call were Drs. Bridge, Cullen, Hoskins, Hart, Lintz, Rayner, Schreiber and Rhoads.

Drs. F. S. Allen and J. T. McAnulty were present as visitors.

President Lintz appointed Drs. Hoskins, Bridge, Goentner, J. R. Hart and Rhoads as censors for the ensuing year.

On motion of Dr. Hoskins, the censors were instructed to carefully examine the names carried on the roll, and remove all delinquent and otherwise derelict members.

A very interesting paper was read by Dr. Hoskins, on "How We Might Best Spend the Meetings of Our Winter Session."

Twenty minutes of the next meeting will be devoted to the discussion of "Azoturia," and the members were requested to keep an accurate record of all cases treated by them during the current month.

The action of the City Board of Health demanding that all dairies from which milk was shipped to Philadelphia, be subjected to a tuberculine examination, and the stand the farmers were taking against it caused quite an animated discussion.

The meeting adjourned to meet December 11th.

W. L. RHOADS, *Secretary*.

The December meeting of the Keystone Veterinary Medical Association was held at No. 3452 Ludlow street, Philadelphia,

on the 11th, with Dr. Lintz in the chair, the following members attending: Drs. Bridge, Cullen, Hoskins, J. R. Hart, Lintz and Rhoads.

Drs. T. B. Rayner, J. T. McAnulty, F. S. Allen and J. O. George were present as visitors.

The censors reported having carefully examined the membership roll and recommended the removal of those delinquents who fail to respond upon receipt of secretary's notice of dues.

The name of R. S. Huidekoper, one of the first members of the association, was placed upon the list of honorable membership, and Dr. J. T. McAnulty was elected an associate member.

Dr. Hoskins read the proposed act to establish "The State Live Stock Sanitary Commission in Pennsylvania."

On motion the association adopted the bill as read.

Drs. J. B. Rayner and Schreiber, the essayists for the meeting, being absent, the discussion of "Azoturia" was now opened by Dr. Hoskins, who was followed by Drs. Cullen, Bridge, McAnulty, F. S. Allen and others, Dr. T. B. Rayner citing a case in 1853.

Dr. A. T. Sellers was appointed to report cases and W. L. Rhoads to read a paper at the January meeting.

W. L. RHOADS, D.V.S., *Secretary.*

The first meeting of the winter session of the Keystone Veterinary Medical Association was held at the office of Dr W. H. Hoskins, No. 3452 Ludlow street, Philadelphia, October 9th.

In the absence of President Goentner, Dr. W. L. Rhoads, of Lansdowne, was called to the chair.

The reading of the minutes of the last meeting was suspended, as the secretary was not present.

This being the annual meeting, the following members were elected as officers for the ensuing year: President, Charles M. Lintz, of Chester; Vice-president, James B. Rayner, of West Chester; Treasurer, Francis Bridge, of Philadelphia; Secretary, Warren L. Rhoads, of Lansdowne.

The election of directors was postponed till the November meeting.

CHARLES M. LINTZ, *Secretary pro tem.*

THE IOWA STATE VETERINARY MEDICAL ASSOCIATION

Held its seventh annual meeting at the Savery Hotel, Des Moines, on November 15th and 16th.

The meeting was called to order by the President, Dr. W. B. Niles, at 10 A. M. Roll-call by the Secretary, Dr. J. E. Brown, showed about twenty members present, consisting of Drs. Brown, Edwards, Heck, Hammond, Austin, Johnson, Morse, Lincoln, Niles, Miller, Paine, Stalker, Sayers, Starkey, Stewart, and others. Drs. Adams, Day, Geddes, White, McCarthy, McCall, Peters, Wake, and a few others were present as visitors.

Letters of regret were received from Dr. Kennedy, M. D., Secretary of the State Board of Health, from Dr. W. L. Williams of Montana, and from two or three others whose names are not at hand.

The President, in his annual address, called attention to several things seemingly of importance to the advancement of the profession. The following extracts show the tenor of the paper :

“ Our Secretary has truly said, in his circular letter, that ‘ The veterinarian should be a sanitarian.’ How many of us in the past have paid much attention to sanitary medicine ? Very few, indeed. It is true that but few people ask for sanitary advice. Is not this condition largely the fault of the veterinarian ? As he in many cases is not prepared to give such advice, and has not impressed his patrons as having a knowledge of sanitary medicine, is it any wonder that he is not thought of in connection with such matters ?

“ The future veterinarian *must be* a sanitarian ; of all medical men he is best fitted for a sanitary officer, not only to guard the health of animals but the public health as well. Being more familiar than the human physician with comparative medicine, he better understands the animal plagues which are communicated to man, and thus better understands the laws necessary for their prevention. The question of sanitation is exceedingly important, not only from an economical standpoint

but on account of the danger to the public health. Tuberculosis in cattle has recently been shown alarmingly prevalent in many States, and well merits the attention it is now receiving. In this State the disease is, without a doubt, much more prevalent than is usually supposed, and should receive the consideration of all medical men and the attention of all who are interested in our live stock interests and the health of the people.

“With the improvement in the value of horses, which is already being manifested, and the widening field of the veterinarian's work, as shown by the increasing demand for meat inspectors, city veterinarians and other sanitary officers, we sincerely believe that the veterinarian capable of taking his proper position in the field of medicine has a good future before him. It seems to us that the demand for veterinarians with a more broad and liberal education, men capable of taking the advanced positions of the near future, should be a lesson for some of our colleges to enlarge their curriculum and in other ways improve their facilities.

“It is with some alarm that we view the starting of so many new colleges, which must, judging by the length of the college course, turn out ‘horse doctors’ rather than skilled scientific veterinarians.

“Have we not more to fear from the poorly educated man with his diploma than from the non-graduate? Many think we have. Would it not be well for us, as an Association, to raise our requirement for membership as high as those of the Missouri State Veterinary Medical Association, and thus stand hand in hand with that society in resisting this threatened innovation of empiricism?

“Would it not be well to put ourselves on record concerning army legislation? Last spring I wrote many of our Congressmen urging their support of the bill then in the hands of the Military Committee, and from most of them I received very encouraging replies. If we pass a resolution favoring such a bill, it may have some weight. If all the State associations would do this, it would surely help. Let us do our part.”

The printing of the proceedings of the meeting, by the Association, was also advised.

The Secretary and Treasurer in his report also called attention to some of the questions discussed by the President, urging their importance. His report showed the Association in a prosperous condition financially and otherwise, the society having about seventy members in good standing.

The Board of Censors reporting favorably on the eighteen applicants for membership, they were duly elected. Many of these were present, and took part in the meeting.

The attendance of old members, and the number of veterinarians joining, was noted as being greater than for many years past.

The committee on legislation presented an instructive report explaining why desired legislation had not been secured. Although the bill introduced was only intended to regulate the title of the veterinarian, prohibiting non-graduates from assuming the title of the graduate, it could not be passed without amendments, which the committee could not agree to. Consequently, preferring no legislation to the passage of such an amended bill, it was not reported from the House committee to which it had been referred. It was found that many members of the Assembly feared the influence of the non-graduates in these localities, and could not be induced to favor any bill which seemed to prevent them from practising. It will thus be seen that legislation failed largely from lack of influence.

Committee on collective statistics made a brief report, stating some of the difficulties encountered in collecting satisfactory statistics, but recommending that the work be continued for another year, so that the results might be compiled and thus made as valuable as possible.

Committee on the securing of the 1895 meeting of the Missouri State Veterinary Medical Association reported that correspondence with Dr. Haskins revealed that the meeting would in all probability come West, and that any steps taken to secure it for Des Moines should be taken soon. Correspond-

ence with a number of Western members showed they were heartily in favor of holding the meeting in Iowa.

The Association, acting on this report, decided to take active measures to secure the meeting, and appointed a committee of three to undertake the work. An assessment of \$2.50 each was levied, to constitute an entertainment fund in case the meeting should be secured and the money needed.

Under the head of new business several interesting questions were discussed, and as suggested in President's address, committees on sanitation, publications, army legislation, and to consider advisability of preparing articles for the agricultural press, were appointed. Notice of an amendment to the constitution, raising requirements for membership as high as those of the Missouri State Veterinary Medical Association, to be acted upon at next meeting, was given.

The consideration of the above consumed the time of the morning and afternoon sessions. At the evening session, beginning at 8 P. M., two valuable papers were read, one on "Meat Inspection at the Abattoirs," by Dr. S. Stewart, Government Meat Inspector of Kansas City, and the other by Dr. G. A. Johnson, City Meat Inspector of Sioux City, on "Meat Inspection at the City Market."

Dr. Stewart's paper was illustrated by stereopticon views, and described fully the character of Government meat inspection. The kind of diseased meats most frequently encountered was emphasized and many other points of importance touched upon. This paper was both interesting and instructive, and shed much light on a subject at present little understood by a majority of American veterinarians.

Dr. Johnson's paper was also a valuable contribution to sanitary literature. It gave the ordinance of Sioux City providing for the inspection of meats and fruits, etc., and mentioned the utter impossibility of the ordinance being carried out to the letter, and gave the *modus operandi* as carried out by the writer. An opinion as to what city inspection should consist of was also given.

Both of the papers on meat inspection were very generally discussed, with much profit.

At the morning session, on the 16th, about thirty members were present. Dr. W. B. Niles, of the Veterinary Department, Iowa Agricultural and Mechanical College, read a paper on "Milk and Dairy Inspection." This was illustrated by showing views of some of the bacteria which find their way into milk, and also of two tuberculous cows apparently (judging by their appearance) in the best of health.

In this paper the inspection of milk as carried out in Iowa was described, and reasons given why a more careful and extended inspection should be made, together with what, in the opinion of the writer, this should consist of. On account of its importance the subject of tuberculosis was given prominence, and the results of personal work with the tuberculin test was given.

After a general discussion of the paper on Milk and Dairy Inspection, Dr. J. Miller, of Ottumna, read an interesting paper on "Diseases of the Liver—Symptoms and Treatment."

In this paper the writer described concisely a number of cases of liver disease coming under his observation during several years' practice; symptoms and treatment were made prominent.

Quite a discussion followed, some thinking that if Dr. Miller had diagnosed his cases correctly they had overlooked the disease in their own practice.

In a paper on "Flatulent Colic, and Treatment with Trochar and Canula," Dr. Austin, of Newton, Iowa, described the prevalence of the colic through the rectal wall. Cases were mentioned where efforts to relieve by puncturing through the flank failed to relieve, but relief was quickly afforded by rectal puncture.

Discussion brought out the fact that repeated puncturing through the flank was not necessarily serious, and that abscesses did not often occur if instruments were sterilized before using.

Dr. A. B. Morse, of Des Moines, described as "an interesting experiment" a case in which strong haltness caused by

tibial neurotomy was subsequently cured by peroneo-phalangeal tenotomy. A general discussion of operations for relief of spavin lameness, followed.

Dr. C. M. Day, of Veterinary Department, Iowa Agricultural and Mechanical College, read a paper on "Some Parasites of the Horse." The writer stated that the practitioner, in his opinion, should know more than is generally known of parasites coming under his observation in his daily practice. The paper dealt with a few species obtained principally from animals destroyed at the college for dissecting purposes. Owing to lateness of the hour discussion was rather brief.

A voluntary paper was offered by Dr. A. R. Wake, of Veterinary Department of Iowa Agricultural College, on the tuberculin test for bovine tuberculosis.

In this the agent tuberculin was described, together with the *modus operandi* of its use, as carried out in quite a series of cases in which the writer had assisted. The reaction obtained in some cases—what should be considered a reaction—and the reliability of the test, were points discussed. As the subject of tuberculosis had been extensively discussed before, discussion following this paper was not lengthy.

Election of officers resulted as follows: President, J. Miller, of Ottumna; Secretary and Treasurer, J. E. Brown, Oskaloosa; Vice-president, W. H. Austin, Newton.

Committee on Resolutions reported the following, which were adopted unanimously:

WHEREAS, It is demonstrated that tuberculosis in cattle is widely distributed throughout this State;

WHEREAS, This disease can be communicated to mankind through consumption of the flesh of tuberculous cattle; and

WHEREAS, The disease can be communicated to mankind through consumption of the milk from tuberculous cattle; therefore,

Be it Resolved, That it is the sense of the Iowa State Veterinary Medical Association that the State Board of Health should immediately make such rules and regulations as in their best judgment will eradicate this disease from the herds of this State.

WHEREAS, Municipal meat and milk inspection is of very great hygienic importance; and

WHEREAS, The laws of Iowa bearing on this subject are very meagre and imperfect;

Therefore be it Resolved, That it is the sense of this Association that the Legislature-elect should enact a law providing for efficient meat and milk inspection for all municipalities in this commonwealth.

Before adjourning, it was decided to meet at the call of the President and Secretary.

Thus closed one of the most, if not *the* most, successful meetings in the history of the Association. This result is extremely gratifying, especially to those who were instrumental in making the meeting a success. While there is much work for the Association during the coming year we believe the enthusiasm of the members will insure its accomplishment.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY

The regular meeting of the Veterinary Medical Association of New York County was held on Tuesday, December 4, 1894, at eight o'clock, with the President, Dr. Huidekoper, in the chair.

On roll-call twenty-five members were present.

The minutes of the last meeting were read and approved.

Dr. Gill, as Chairman of the Board of Censors, reported favorably the names of Drs. J. Serling, W. Lellman and R. W. Hall.

He then reported in detail the financial condition of the association as follows, viz.:

Initiation fees and dues received up to December 3, 1894, \$291, and that there still remained due \$106, giving the names of the delinquent members.

The expenditures up to December 3, 1894, amounted to \$202.87, leaving a balance of \$88.13.

Moved and seconded that the report be accepted. Carried.

Moved by Dr. Cattanach, Sr., that all those who had not paid their initiation fees and dues be dropped from the roll.

Dr. Gill offered an amendment to that motion, that all delinquents be notified that if they did not settle on or before the next regular meeting, their names would be dropped from the roll.

Dr. Cattanach accepted the amendment, and it was seconded and carried.

The secretary then stated that he omitted to give the board the name of another member who was delinquent.

Moved and seconded that the correction be accepted. Carried.

Reading of papers was next in order, and Dr. Glover read a very interesting paper on "Canine Distemper," first taking up the disease and then the many complications that frequently take place.

Moved and seconded that a vote of thanks be extended to the essayist. Carried.

A very interesting discussion then followed, in which a majority of the members took part, after which the president closed the discussion by summing up the symptoms and treatment of the disease as he found it.

Dr. Neher's paper on "Veterinary Education" was laid over until the next regular meeting on account of the great amount of important business to be transacted.

Report of Committes on Certificates, Dr. Liautard, chairman. Dr. Liautard was absent, but wrote the president that he understood that the committee had been discharged.

After a discussion, in which Dr. Becket, a member of the committee, reported, it was moved and seconded that the committee be continued, and that they report at the next regular meeting for final action. Carried.

Committee on Revision of By-Laws, Dr. Robertson, chairman, reported progress. Moved and seconded that the report be accepted and the committee continued. Carried.

Committee on Change of Location, Dr. Robertson, chairman, Dr. Glover reported several places for holding the meetings and

the cost of each. After a discussion it was moved and seconded that the committee be continued and that they report upon other localities at the next meeting. Carried.

Committee on Charges, Dr. Neher, chairman, read a list of the charges adopted by the committee, several being left open for discussion. Moved and seconded that the report be laid over until the next meeting, for discussion. Carried.

Judiciary Committee.—Dr. O'Shea reported that they expected to have a bill to "Exempt Veterinarians from Jury Duty" passed at the next session at Albany, and that the committee would follow all bills relating to the profession, and that in the near future they would commence to prosecute illegal practitioners.

Moved and seconded that the report be accepted and the committee be continued. Carried.

Election of New Members.—Dr. Neher moved that the by-laws be suspended before the election. Carried.

Dr. Gill then moved that Drs. Serling, Lellman and Hall be elected by acclamation. Carried.

Election of Officers. Moved by Dr. O'Shea that the by-laws be suspended before the election. Seconded and lost.

Nominations then being in order, Dr. O'Shea nominated Dr. Huidekoper for president, Dr. Robertson for vice-president, Dr. Giffen for treasurer, and Dr. Ryder for secretary. No other nominations being made, it was moved and seconded that the nominations close. Carried.

Moved by Dr. Hanson that the by-laws be suspended during the election of officers. Seconded and carried.

Moved and seconded that Dr. Gill cast a ballot for the election of officers. Carried.

Dr. Gill cast a favorable ballot for their election.

New Business.—None.

The president then appointed as the Board of Censors for 1895: Dr. H. D. Gill, chairman, Drs. O'Shea, Hanson, Turner and Cattnach. Adjourned.

J. E. RYDER, D.V.S., *Secretary*.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The sixth annual meeting of the Indiana Association of Veterinary Graduates was held in the parlors of the Hotel Anderson, Anderson, Ind., on December 11 and 12, 1894.

The meeting was called to order by the President, Dr. J. E. Cloud, in the chair.

There were present Drs. J. E. Cloud, Richmond, Ind., C. M. Stull, South Bend, Ind., F. W. Myers, Fort Wayne, Ind., F. A. Balser, New Castle, Ind., Lee Hoover, Richmond, Ind., O. L. Boor, Muncie, Ind., W. B. Wallace, Marion, Ind., J. W. Cook, Goshen, Ind., C. F. Bell, Kokomo, Ind., J. C. Rodger, Anderson, Ind., J. O. Greeson, Kokomo, Ind. Visitor, Dr. F. W. Anderman, Hartford City, Ind.

In the absence of the secretary, Dr. J. H. Honan, Hammond, Ind., on motion Dr. J. C. Rodger, was elected secretary.

The minutes of the previous meeting were read and approved.

The secretary's report was then read and accepted, also the treasurer's report was read and accepted.

The following gentlemen presented themselves for membership and were elected: Drs. H. J. Kannal, Rensselaer, Ind., F. W. Anderman, Hartford City, Ind., J. W. Lefever, Warsaw, Ind., W. C. Clevenger, Union City, Ind., and G. R. Christian, Glens Valley, Ind.

The election of officers resulted in the following-named gentlemen being duly elected and installed for the ensuing year: Drs. J. E. Cloud, president; W. F. Myers, vice-president; O. L. Boor, treasurer; J. C. Rodger, secretary; C. M. Stull, W. B. Wallace and G. H. Roberts, board of censors.

The following committee was then appointed on arrangements: Drs. J. E. Cloud, W. F. Myers and J. C. Rodger.

The meeting then adjourned until 8 P.M.

Upon reconvening, a paper was then read by the secretary, written by Dr. H. R. Macaulay, of Indianapolis, on "The Treatment of Pneumonia," which was very ably written, and showed that the writer was conversant with the disease and how it should be treated.

This was followed by many remarks from the members on the methods that should be pursued on the treatment of this disease.

The meeting then adjourned until 8:30 P.M.

Upon reconvening, Dr. Lee Hoover was called on to read a paper on reports of some interesting cases, which was received by the members with a great deal of interest, and a great amount of discussion followed.

The meeting then adjourned to meet in Marion, Ind., July 9 and 10, 1895.

J. C. RODGER, *Secretary*.

PRESCRIPTION.

AN ANTISEPTIC DUSTING POWDER.

Pick commends the following in place of iodoform :

℞ Bichloride of mercury, gr. $\frac{1}{6}$ to $\frac{1}{3}$;
Boric acid, $\bar{3}$ i ;
Tannic acid, 3 ii ;
Sugar of milk, $\bar{5}$ ii.

The sublimate is first rubbed up thoroughly with the sugar of milk, and the other ingredients are added.— *Therapeutic Gazette*.

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AMERICAN VETERINARY REVIEW,

MARCH, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIALS.

TUBERCULOSIS SCARE.—This subject is more than ever occupying the attention of veterinarians, as well as it does that of those who by their occupation, their trade or their fancy, are interested as to what will become of all their cattle should the disease be found prevailing in their stocks.

Indeed, our agricultural papers are in their various issues repeatedly treating on the subject; veterinarians are making experiments and familiarizing themselves with the application of the tuberculin test; legislatures in the various States are passing or requested to enact laws relating to tuberculosis; applications for official veterinary appointments are pouring in before those who hold the power of appointment, and what not? It is the repetition of the excitement which prevailed when the stamping out of pleuro-pneumonia was inaugurated a few years ago.

In our issue this month, we publish a long article from the pen of that indefatigable student and observer, Professor Law, and we have no doubt it will, not only be read with pleasure and interest, but also will prove a subject of great value, presenting as it does, the personal views of one, who we have been accus-

tomed to consider as an authority in matters concerning sanitary veterinary medicine.

The article will no doubt create a sensation, especially in Massachusetts, where things do not seem to run very smoothly, if we are to believe the *comptes rendus* of some investigations which have been made in relation to the manner in which the process of tuberculin test has been carried out, the specific tagging of cattle has been done, etc. Our worthy friends of the Board of Cattle Commissioners must have had unpleasant tasks and disagreeable duties to perform, but after all it was for the good of all, and it does not belong to us to be too severe in our criticisms so long as we have no official authority to inform us, and we are obliged to depend on news and agricultural papers.

But leaving all that as it is, all this noise about tuberculosis, like all that which was made at the time of pleuro-pneumonia, must have a bad effect, not only at home, but abroad. In fact it has, and if we are to believe that the French Government has passed resolutions preventing the importation of American cattle on French soil, because of the prevalence of contagious diseases, is it not justifiable to think that this tuberculosis scare has something to do with it?

The pretended cause for the action of the French Government is simply ridiculous—for certainly we have no contagious diseases among our cattle of which French authorities can be afraid, and we have no doubt that our Chief of the Bureau of Animal Industry will at once take proper measures to show the error of closing French ports to American cattle.

Let us make less noise about the disease—let us work quietly. Do not allow us to boast too much of the beginning of one undertaking, which in the eyes of many cannot be certain of success, and in all probabilities we will be spared many annoyances and disappointments. Veterinarians have already been pretty roughly spoken of in relation to this noise; it would be better for them to be more careful, less hasty, and less positive of the results they have in view, no matter how powerful their convictions may be.

JOHN GAMGEE.—It is a sad duty for us to record the death of this great veterinarian. We knew him when we were a student, we renewed friendship in this country when he came to America some years ago. His work in behalf of veterinary medicine is known to many of us, the books which he has written, his journal, the *Edinburgh Veterinary Review*, his connection with veterinary education, all have made for him in the veterinary world, a place which he filled well. John Gamgee was born in 1831, so that he was in his 64th year at the time of his death. In the last years of his life he had given up veterinary science and had turned his attention to engineering.

ORIGINAL ARTICLES.

STATE SUPPRESSION OF TUBERCULOSIS UNWARRANTABLE IF NOT THOROUGH.

BY JAMES LAW, F.R.C.V.S., Ithaca, N. Y.

TUBERCULOSIS AND STATE MEDICINE.

In undertaking any systematic State sanitary work against tuberculosis the prime consideration must be that such work shall have a permanent value. Many stock owners have no conception of this and look upon State measures as a sort of special Providence, to relieve them from an immediate and inevitable loss. The man who has a dying tuberculous cow wants the State to anticipate its death by a few days, or weeks,

and to pay him for what would otherwise have been a total loss. But for the State to go further, and rid his herd of every other tuberculous animal, even though it may be yielding a remunerative flow of milk, or producing, year by year, a valuable pedigreed calf, he is less ready to approve of. Yet unless this thorough purging of the herd is aimed at, it must be evident that it is a prodigal waste of public money to kill and pay for the animal that is so far advanced with the disease as to be useless alike for the dairy, the breeding farm and the butcher.

It may be set down, then, as an inviolable principle of action, that no State interference is justifiable unless it has for its aim the extinction of tuberculosis in the herd. This may be extended by saying that State action is only justifiable when its purpose is the purging of the herds of the whole district from the infection of tuberculosis. If infection is left in the herd or in the district dealt with, not only will the products furnished by such herd or district prove poisonous in various degrees to the consuming public, but sooner or later the latent or occult cases will, in certain numbers, assume a more active type of disease, spread it in the herd and from herd to herd, and increasingly endanger the products offered from the dairy and the butcher's stall.

There is no sufficient warrant for making legislative appropriations and instituting State sanitary work in this direction, unless such work aims at a complete extinction of the bacillus tuberculosis in the herds of the State, or of the district to which such sanitary measures are applied. The two questions that confront us are :

1. What measures will give us a reasonable expectation of the extinction of tuberculosis ?
2. Are such measures available and practicable in the State of New York ?

In response to the first question, two different methods offer themselves for choice, which may be named respectively the *radical and progressive* methods. The consideration of these may answer the second question as well.

1. *The Radical Method.*—In this method all the herds of the State would be examined and tested with “tuberculin” as speedily as possible ; the diseased animals would be condemned, appraised, killed and safely disposed of ; the premises disinfected ; other genera of animals that have cohabited with the diseased would be examined, and, if necessary, safely disposed of ; vermin would be killed, and all consumptive persons would be debarred from attending on the purified herd or preparing their food. Finally all new purchases would be kept apart from the herd until they had been tested with “tuberculin.” In this way every step would be so much clear gain, and what had once been accomplished could be looked upon with reasonable confidence as a permanent success.

Without entering into the details of such a scheme, and while allowing that it would prove the most efficient, and in the end, perhaps, the most economical resort, it may suffice to estimate the cost, and to consider whether the requisite number of thoroughly trained men could be secured for professional inspectors.

The meat cattle of New York are, by the census of 1890, 2,328,015 head, and to test these in one year, at the rate of twenty per day for each inspector, would require 360 professional inspectors. The ratio of tuberculous animals is probably 5 per cent., amounting to 116,400, and the post-mortem examinations of these at the rate of twenty-four per day for each inspector, would require 16 more inspectors for an entire year. The expense account might, therefore, be expected to include the following :

Indemnities for 116,400 cattle, at \$25,	\$2,910,000.
Inspectors, 376, at \$1,500,	- - 564,000.
Administration expenses,	- - 10,000.
Total,	- \$3,484,000.

By many this will be considered as prohibitory, though when taken in connection with the disabilities and deaths from tuberculosis in man, and the losses to our herds and products, it need not be condemned on the score of expense.

Another objection is the difficulty or impossibility of at once

securing and putting in the field the requisite number of veterinary inspectors, who could be intrusted with the delicate work of testing cattle with "tuberculin." Duties which involve so fundamentally an interest so large and so important as our dairy herds, should demand that all candidates for the inspectorship should pass a thorough examination in the diseases, dietetics and hygiene of cattle, and in the applications and uses of "tuberculin." No less important is it that they should be certified to be of good moral character and unimpeachable integrity. Much delay would be incurred in applying such tests or in training the requisite number of reliable men, so that it would be impossible to enter upon the whole field for a considerable time.

Another hindrance would be the difficulty or impossibility of securing at once a sufficient supply of a reliable brand of "tuberculin." With a fully equipped State veterinary college the work of preparing this agent might be undertaken there, but with this institution still in embryo this is impossible.

We may turn, therefore, to the second or progressive method as being more promptly available.

2. *The Progressive Method.*—By this method one reliable veterinarian would be allotted to each county or other suitable district, whose duties it would be to make and keep a census of all bovine animals, and a record of all additions, sales, and deaths, and to make a post-mortem examination in case of any death from disease or slaughter because of disease. He would also be called in by any butcher who found what he believed to be tuberculosis on opening an animal. On the discovery of a specimen of tuberculosis, the inspector would submit this to the diagnosis of the chief veterinarian, and on his corroboration the whole herd in which such animal had been would be subjected to the "tuberculin" test, and those found tuberculous would be condemned, appraised, killed, and safely disposed of and the premises disinfected. Similar precautions, as under the *radical* system, would be adopted toward vermin, toward other animals that had cohabited with the diseased, and toward tuberculous attendants and new purchases.

This would speedily purify all the dangerously affected herds, and would not fail to reach, sooner or later, all herds in which any tuberculosis whatever exists. The final result, therefore, would be as thorough as under the more speedy and radical system. It presents at the same time certain features, such as the comparative absence of immediate expense and the absence of serious disturbance of the cattle industry, of panic or excitement, which will serve to recommend it. The salaries of inspectors, even if seventy were required at \$1,500, would amount to but \$105,000; the indemnities would be in gradual demand, and not called for all at once, and many of the latent cases of tuberculosis would meanwhile find their way to the butcher, and thus reduce the outlay. We might well follow the lead of Belgium, Germany and other countries of Europe, in allowing a reimbursement of one-fifth the value for any tuberculous carcass that had been slaughtered in good faith for human food, as this would at once withhold from the market a dangerous article and secure an evidence of the existence of tuberculosis in the herd from which the animal was drawn.

This *progressive method* would be much more easily and promptly introduced. The smaller number of inspectors needed would allow of the choice of better qualified men, and the chances of error by men new to the work would be reduced to a minimum, as all first cases in a herd would be subjected to the professional chief, and all first tests would be under the immediate direction and observation of such chief, or of an experienced inspector. Thus, the new inspectors would be gradually made acquainted with all the details of the work and the precautions to be taken in carrying it out. The stock owner would have every possible guarantee that no hasty nor ill-advised action would be taken in putting his herd to the test, as no such step would be taken until the disease in the first case had been passed upon by the best authority. The protection of the stock owner could be still further secured by the avoidance of publicity in the case of tests applied and cattle condemned. There would be a large economy secured in the fact that the tests would at

first be applied only or mainly to herds in which advanced or dangerous cases had appeared, and that the non-tuberculous herds constituting a very large proportion of our State cattle, would never be subjected to the expensive test at all, but would remain throughout above suspicion.

The amount required for indemnities under this method is so uncertain that it is difficult to settle on the sum necessary to conduct the work for one year, but with \$100,000 for inspectors and an equal amount for indemnities and administration expenses, the task could be commenced with a fair degree of confidence.

3. No other plan can be at all compared to the above, nor indeed justified as a State measure for the suppression of tuberculosis. The method now in force in New York and Massachusetts, of furnishing examination, "tuberculin" test and indemnity on herds, the owners of which apply for this, and leaving all others untested, will temporarily purify a large number of the most infected herds, but it is not likely to rid a district of the infection, and the tuberculous herds that remain will sooner or later reinfect the neighboring herds that have been thus purified. The gain, therefore, is very partial, temporary and uncertain, and there is no means of preserving what has been acquired. It lacks too, in the matter of evenhanded justice; as the stock owner who fails, through ignorance or otherwise, to apply for State help is excluded from the benefit, while the more intelligent owner, who has sought and obtained such help, is still left in constant danger of reinfection from his neighbor's tuberculous herd.

The alternative of having city or other boards of health insist on the testing of all cattle engaged in furnishing their milk supply, is liable to exactly the same objection. One herd furnishing sweet milk is tested, and two others on the two sides of it, devoted to the production of butter and cheese, are left untested. The extinction of the disease in the district has not been accomplished, and the opportunity for reinfection from the adjoining herds, are too frequent to allow of the guarantee of the tested herd remaining of value for any length of time.

Such methods are wasteful and uncertain, and are utterly inadmissible, when the State can step in and accomplish a work that will be of permanent value.

It is not for a moment intimated that these other partial methods will be without benefit. It is freely conceded that they will greatly diminish the advanced, aggravated and most dangerous cases of the disease in live stock, and will have an appreciably beneficial influence on the public health. It is merely alleged that they are not calculated to eradicate the disease from our herds, to accomplish systematic and permanent work, such as the veterinary sanitary science of to-day demands as a right, because it has, with our light, become a possibility.

The temporizing methods may be well likened to an attempt to clear a field of couch grass (*triticum repens*), by digging it out and thoroughly purifying a square rod here and there at different parts of the affected field. At first these laboriously cleaned patches would be beautiful and productive, but in a year or two they would be again overgrown by the weed and the care and labor would have been all in vain.

We might well take a lesson in these things from the experience of the past. In the eighteenth century it has been estimated that Europe lost 30,000,000 head of cattle by the rinderpest. Towards the middle of the century it invaded Great Britain and threatened the virtual extinction of the bovine race. As many as 30,000 head were lost in a few months in the one county of Cheshire. It was only when the movement of cattle was stopped, the infected slaughtered and the places disinfected, that the disease was speedily extirpated. Again, in 1865, it was introduced, and those of us who, knowing of the past, advised the same stringent measures, were derided and abused, until in six months, 17,000 a week were being attacked, when, driven to desperation, the authorities once more applied the most stringent measures, and in a few months more the plague had been stamped out.

The lung plague of cattle imported into England in 1839 suffered a similar neglect, and prevailed for over fifty years, be-

cause the advocates of temporizing measures prevailed. Finally, in 1891 to the existing measures for slaughter and disinfection there was added the prohibition of movement of cattle in all infected districts, and the disease was wiped out. Professor Brown, director of the veterinary department, in his report for 1893 draws attention to this final and effective restriction which had crowned all previous efforts with the long-wished-for success, and how the same measure had been equally successful in regard to foot and mouth disease and ovine smallpox.

Into America the lung plague of cattle was imported in 1848, and spread from its first center in Brooklyn to Connecticut and south as far as Virginia, and finally into several herds in the Mississippi Valley, and into the very center of our cattle traffic in Chicago. In 1887 the most rigid control of the infected area in Illinois was instituted, and in three months the last acute case of the disease had been reached, and the infection was wiped out in the West. Immediately the same system was put in force in the infected States in the East, and by 1892 the continent was pronounced clear of the plague.

All this had been done in the face of the most violent abuse and denunciation, such as had previously opposed the same measures in England, but those who were the most violent in their attacks are to-day the most forward to recognize the benefit secured, and to pledge their support in any future effort of the same kind.

All over the world the experience has been the same. The central countries of Europe, while temporized which animal plagues, preserved them in their midst, while those which, like Switzerland, Holstein, Denmark, Oldenburg, Norway and Sweden, sought, by rigid and systematic measures, to extinguish the last germ of contagion in the herds, made and kept their herds sound.

It is not contended that the parallel is exact, because tuberculosis cannot be thus completely and speedily eradicated from the land, for the reason that man himself harbors the infection; but this does not alter the general principle that in

dealing with the disease in our herds our aim and strenuous effort must be to first annihilate the microbe in our herds and stables and then to prevent a re-entrance, under which latter head will come the exclusion of all tuberculous persons from dealing with herds. The disease, as it exists in man, must meanwhile be wisely dealt with by our boards of health.

STOCK OWNERS SHOULD HAVE FAIR INDEMNITIES.

One of the greatest obstacles to the success of laws enacted for the extinction of contagious diseases in animals, is the lack of just and reasonable arrangements in the matter of indemnities. The largest experience in this matter produces the strongest conviction that any unwise attempt at economy in this matter is really the worst prodigality, because, if it does nothing else, it delays, or renders impossible the final extinction of the disease.

The position that, because an animal is affected with a contagious and dangerous disease, it is therefore worth nothing or less than nothing, apart altogether from its untruth, is a most suicidal position for any State working for the extinction of a contagion. With a number of our animal plagues, and notably so with tuberculosis, there is a large proportion that pass unsuspected, and fill the pail or even lay on fat as if they were sound. To deny indemnity for such animals, is to tempt the owner, who has lost a cow at intervals, from this disease, to market his whole herd, scattering the infection in a dozen, a score, or several score of new localities. Worse still, it tempts the unscrupulous dealer to buy, at a low figure, the herd of a farmer who has met with one or more cases, and to sell them out again at full market rates. Thus both seller and buyer are victimized, and the disease is spread simply for lack of indemnity.

To make the indemnity one-half of the appraised value, as at present in New York, does not remove this evil. The temptation of half the value is too attractive a bait to hold out to the man whose needs perhaps are great and his moral nature weak. The stock owner knows that if these animals were left in his

hands, they would enable him to fill his contracts, would prevent the loss of trade, or the danger of loss, and would provide the bread and butter for his children. He feels that the State is to a large extent confiscating his property, and perhaps ruining himself and family; and can we blame him if he feels that he is being unjustly dealt with, and if he is tempted to get even with the State, by selling his stock at market prices and purchasing a new herd from what is understood to be a healthy locality? If he is prepared, as is likely to be the case, to sell below the market rates, the dealer is tempted in his turn, seeing he knows that in the public market he can make a large profit by trading in these cattle. Even if this risk is escaped, and a conscientious stock owner informs the government that he has tuberculosis in his herd, and if a number are condemned, the low indemnity is a constant temptation to the appraiser to do violence to his own conscience, because he feels that the stock owner is being unjustly dealt with. He is under constant temptation to appraise above rather than below, or exactly at what he considers the true value. Thus, all round the system is calculated to corrupt the citizen, and what is of more immediate consequence, it is very highly calculated to defeat the ends of the law.

We are told that appraisers cannot be trusted, and that with a high indemnity the State will be made a means of marketing cattle that would otherwise be unsalable. But if this is so, how much worse must it be if the appraiser has continually before his eyes the fact that the State is acting unjustly toward the citizen and forcibly seizing his property at half its value? Is this calculated to make appraisers more scrupulous or more trustworthy? The State must secure trustworthy men, but it must show them that the action of the State itself is rigidly just.

In stamping out the cattle lung plague in Illinois, and New York, the full appraisement was paid for each animal, and the appraisers, drawn in the two States from the two great political parties, administered strict justice as between the government and the citizen. From my personal knowledge I can vouch for their absolute integrity, and I do not hesitate to say that with-

out this justice, and without such integrity, it would have been utterly impossible to stamp out that disease in the short time spent on it, if indeed it had been possible to do so at all. Men of skill in appraising cattle, and of incorruptible honesty and honor, are still to be had, and the appointment of such men as appraisers is essential to success. To proceed on the assumption that appraisers are not to be trusted, and to put down the indemnities to guard against this, is simply to make a bid for dishonesty all round, and to delay success or to make it impossible.

Indemnities must of course be apportioned according to the skill of the appraiser. The actual value for the butcher, or for the dairy, or for raising a high-priced pedigreed calf every year, must be taken into account, and a just estimate arrived at in the case of each particular animal. Some animals that are beyond all usefulness, either for the butcher or dairy, might possibly be worth their hides, while others giving an extra large yield of milk to be sold sweet at four cents to ten cents per quart would bring a handsome price. But with a fair appraisalment the community could not be wronged by allowing four-fifths of the appraised value as indemnity, and such approximation to the real value would make every stock owner the helper of the officials, ready and anxious to have his herd cleared of the infection. Better a thousandfold that the unfortunate stock owner should have such a measure of justice than that the same money should be expended in police restrictions and costly inspections.

The stock owner, whose animals are condemned, does not simply lose his stock, which if they were well enough to be a source of income, is a serious loss in itself. In addition to this, if he is a dairyman, he must do his utmost to get milk to supply his customers, he runs the risk of publicity and of the loss of his customers, he must buy in the open market, and he runs some risk of getting similar infected animals; he is at present put to the expense of slaughter and burial of the condemned, and of a thorough disinfection of the premises where they have been. The mere value of the cattle condemned is by no means the sum

of his loss. If he were to market his suspected animals, nearly all of these incidental losses would be avoided. For animals that were actually or prospectively remunerative, even the full appraised value comes far short of the owner's actual losses. It would be an approximation to justice, therefore, and as contributing to an early success, a measure of the wisest policy to allow four-fifths of the appraised value of the condemned animal.

Other safeguards could be applied; any wilful violation of the law could be punished by confiscation and fine; animals not more than three months from another State could be taken without indemnity, and inspectors, appraisers and owners could be made to swear to the truth of their respective certificates.

In the matter of expropriation for the public good, and indemnification, the two cardinal principles of justice must be kept inviolate. (1) *A man may not do with his own what will hurt another's*; and (2) *No reputable private property may be taken for the good of the commonwealth without due compensation*. To do otherwise is at once to do an injustice and to defeat the object of the sanitary work.

NEED OF UNIFYING THE STATE CONTROL OF ANIMAL PLAGUES.

Economy and Efficiency.—The existing New York legislation for the suppression of contagious diseases of domestic animals has grown up under cases of urgency of special contagious diseases, and successive bills have, unfortunately, vested the authority in different officials and departments. The work cannot fail to suffer both in economy and efficiency under this arrangement. Tuberculosis is in charge of a special commission, glanders in the hands of the State Board of Health, and all other animal plagues in those of the Commissioner of Agriculture. A farmer thinks he has cases of tuberculosis and applies to the commissioner, who records the application, sends an inspector and receives a report that the cases are not instances of tuberculosis. This conclusion is entered in the

records and the matter dropped, as the commissioner has no authority to go farther. The Commissioner of Agriculture is next applied to, records the application, sends an inspector who, in due time, reports that the disease is not one with which he has to do, and he in turn records this report and drops the case, having reached the limit of his authority. Finally the stock-owner appeals to the State Board of Health, provided he has the virtue of persistency and that his cases continue in life. The Board, in their turn, send an inspector, and at last, perhaps, the goal has been reached, the disease really being glanders. But three bureaus have been successively engaged on the one case; three separate sets of inspectors have been sent to examine and investigate, and three sets of clerks in as many divisions of the government have recorded in three sets of books what only belongs to one of them. The unnecessary outlay of time and money is bad enough, but this is not all. The uncalled-for delay has cost the stock owner time and money for the seclusion of the animals, or it has furnished an opportunity for the extension of the infection to new members of his own herd, or to other herds. Now all this would be saved by concentrating this work under one head. It should be in the hands of some one who is an expert on farm live-stock and their diseases, and the inspector sent out should be an accomplished veterinarian, ready to recognize and deal with any malady of domestic animals. There would thus be no need for the duplication and triplication of the direction, inspection and records, and any dangerous contagion would be checked promptly before it had an opportunity to make further extension.

Better Inspectors.—By having our set of inspectors in State pay a better class of such officials can be secured than if an inspector were employed by each of the three departments when wanted and sent out to deal with strictly one disease. The knowledge of the conditions and causation of disease in a district is of the greatest value in any such investigation, and if all the sanitary work for animals were devolved upon one class of inspectors, they would soon gain a knowledge of such local

conditions in each district and would be enabled to render so much the more efficient and valuable service.

The Value of a State Veterinary College in this Connection.—It is generally confessed that a main drawback to the immediate organization and successful administration of measures for the supervision of tuberculosis and other preventible diseases in flocks and herds is the lack of veterinary practitioners sufficiently educated on modern sanitary science to undertake the work.

By the acts of a few years ago veterinary surgeons have been manufactured wholesale in this State by simple registration and without any educational prerequisite whatever, until the title has come to mean practically nothing. It was this recognized need that drew from Governor Flower and the Commissioner of Agriculture the recommendation that better facilities should be provided for the protection of our live-stock by improving the means of veterinary education, and which led the legislature to establish the Veterinary College of the State of New York, and to make an appropriation therefor. To make this college and its curriculum commensurate to the task of protecting our \$200,000,000 worth of live-stock, and of providing the class of veterinarians capable of furnishing such protection as a full knowledge of all modern sanitary and therapeutic methods can provide, the State must, as it doubtless will, equip that college as fully as the best veterinary college in the old world, and furnish the means of drawing to its chairs the best talent which it is possible to secure.

Value of Such Veterinary Faculty to the State.—When such a faculty shall have been secured it would be a profligate policy in every sense to leave its skill unused in the practical work of veterinary sanitary science. The man who is above all others fitted to teach the subject of veterinary sanitary science, or of veterinary prophylactics, or veterinary therapeutics is confessedly the best man to say how such special subject should be practically applied to the flocks and herds. The State will have these men in its own employ, and it will be doing an injustice to its citizens and robbing them of their just rights if it fails to

draw upon their special knowledge and skill in any effort to protect and improve the flocks and herds of the commonwealth. If the veterinary faculty are not pre-eminent in the special lines that they respectively teach the college will fail of the object for which it is established ; but if they are, as they must be, each pre-eminent in his specialty then this pre-eminence should be secured for the immediate benefit of the State, as well as for the more remote benefit which must come from the education of veterinarians.

Value of the Veterinary Faculty as Investigators.—In all veterinary sanitary work there are constant questions of pathology, of microscopy, of the influence of soils, drainage, foods, and of toxic and other plants, of bacteria and their products, of the whole new world of potencies connected with bacteria, of toxins and antitoxins, of ptomaines and enzymes, of albumoses, nucleins and globulins, of phagocytosis and chemiotaxis, of lessened and exalted virulence and their causes, of the relative resistance of different animal fluids and tissues, and of different genera, and of the influence of life conditions on such resistance, of the toxic and antidotal effects of combinations between different bacterial products, of the different susceptibilities of the germs to the influence of environment and of disinfectant agents, and of the thousand other things that go to determine results. The laboratories of the veterinary college, fitted up by State funds for the investigation of all such subjects, are the only proper places for such experiment and investigation. This can be done nowhere else so effectively, unless the State should duplicate both laboratories and experts at a most extravagant and altogether unnecessary outlay.

The Educational Value of Sanitary and Experimental Work.—The closest connection between the veterinary sanitary work and the work of investigation and experiment on the one hand, and the State Veterinary College on the other, is absolutely essential to the maintenance of a high standard in its educational methods.

The most accomplished teacher cannot keep fully abreast of the times, unless he is constantly *en rapport* with the burning

questions of the hour; and, therefore, it is not enough that we secure the best men as teachers, but we must provide them with the means of maintaining their pre-eminence. The veterinary faculty, therefore, and the laboratory workers should be placed in the closest relation with every department of sanitary work in the field, not only that the State should secure the best and most economical service in its field work, but that the ability of the teachers in the State college should be constantly stimulated and kept up to date, and that the students should be provided with the most advanced teaching and the best ocular demonstration. The material from the field, and the questions that rise in field work should be constantly available for such demonstration and for such advancement of veterinary science. This the students have a right to demand, and this the stock owners who are to entrust their property to these students in after life have a right to demand.

Value of Sanitary Field Work in Securing Better Teachers.—The eminent scientist is not willing to bury himself where he cannot have the best opportunity for advancement in his specialty. He may decline a chair where this opportunity is restricted, whilst he would grasp at a position which offered abundant opportunity for investigation and advancement.

In every sense, therefore, in economy and efficiency, in justice to the professor, in justice to the student, in justice to the stock owner and community, it is imperative that the State veterinary college shall be kept in the closest touch with all practical veterinary sanitary work. Not in regard to tuberculosis or glanders alone, but in regard to the whole immense field of veterinary science and comparative medicine, this rule holds: that alike for the present good of the stock owner, for the advancement of comparative medicine, and for the education of our future practitioners of comparative medicine, our veterinary college of the State of New York should be very fully equipped in material and talent, and that both should be availed of as far as they can be, by the closest connection with the veterinary sanitary work of the commonwealth.

AN UNCLASSIFIED DISEASE OF CATTLE.

By T. B. NEWBY, D.V.S., Pana, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

On May 2, 1892, I was called to Lakewood, Ill., to examine ten head of yearling steers thought to be suffering from rabies. As we drove out from the railroad station, my patron, Mr. W——, informed me that he had bought the stock from a farmer living some miles below on a broken timber farm, and that they had been poorly fed and cared for during the winter, and consequently when purchased were badly nourished. Seven head were shown me showing no outward signs of disease, otherwise than slight stiffness and being somewhat nervous. Then one cadaverous subject of same herd, that had been dead and buried for two days, was exhumed for post-mortem examination. Whether rigor mortis had been present or not, it was wanting now; neither had any post-mortem degeneration taken place. Neither were there any gases in the abdomen, only signs of disease shown in any of the abdominal viscera, rectum omasum and duodenum; the two latter were empty, except a glossy mucous secretion. The remainder of the bowels were nearly empty, but rectum mucous membrane was inflamed, dark, and contained a little fæcal matter; rumen reticulum and abomasum contained considerable food, which seemed to be arrested by impaction of third campart, yet not bad enough to warrant any such conclusion. Air chambers and mucous membrane of superior maxilla were inflamed throughout. For want of adequate instruments, brain and spinal cord were not examined, but Dr. G. A. Johnson, of Sioux City, Ia., having considerable experience with this disease, fully describes the condition of the brain, which I quote from *American Veterinary Review*, Volume XVIII., page 274. When these were opened, marked lesions of inflammation, especially the brain and all the membranes, particularly the pia-mater, showed marked inflamed

areas, and the cavities contained inflammatory exudate, while those of the spinal column contained fluid and the membranes were inflamed. That portion of pia-mater covering antero-inferior part of cerebrum, besides being inflamed was also of a dark color. The arachnoid space was filled with a serous-like exudate, and ventricles of brain were always filled with inflammatory exudate containing blood and fibrous clots. Next I was taken to a small pasture where two of the herd had been isolated.

Symptoms.—Great distress, nervous and nervous agitation, constantly moving, and bellowing, occasionally would lie down or push the head or nose against the ground or some object, but never quiet; would sometimes show a combative spirit, but when approached would become quite inoffensive. A constant straining, as if trying to defecate; rectum mucous membrane dark colored, respiration quick, pulse small and wiry, and difficult to take correctly; temperature 106° F., power of deglutation gone, pupils fully dilated, mucous membrane of the nose inflamed, secreting a dark-colored fluid, throat and tongue covered with detached epithelium. Animal destroyed.

Necroscopy.—Very near same as first; omasum contained some small gravel and other foreign matter, stomach and bowels nearly empty; no other differential changes.

Was this rabies? No, I think not. While the outward symptoms casually resembled rabies the post-mortem revealed that such was not the case. While I have no objection to the term pseudo-rabies, it is likely to become confusing and misconstrued by the laity. When the malady exists in the neighborhood there is often much interest manifested, and if asked, Is this rabies? I would say no, if I were positive, and then the disease in question would assume a different phase in the minds of parties interested. Dr. Trumbower, State Veterinarian of Illinois, saw these cases twice, but held no autopsy, and in conversation with him said he believed the trouble was not rabies but was undecided. There were ten head of them brought to the farm, and eight out of the ten took

the disease, each in its turn, during a period (from first to last) of about three weeks, living from two to five days, and died. I believe the cause to be a specific one, but shall not attempt to define it. To convince myself that this could not be impaction I gave a cathartic, which acted promptly, but symptoms never abated. I believe it possible that some organism had invaded the body; likely by way of alimentary tract, as their appetite had been abnormal after a winter's semi-starvation, and as they had taken of some provender that had lain and decomposed through the winter—(and possibly in this was a germ with power of production)—as well as the first signs of grass and early vegetation. It might easily be accounted for, but whether correct or not is largely speculative. But thanks to our journals and societies, for if it was it not for them we might think each year that we had discovered a new disease unknown to others; for our standard works and text-books do not contain them all. Pardon me, but I consider no man a local practitioner that never reports anything, *i. e.*, if he has a subject out of the regular line, of benefit to his fellow-practitioner or public health, for it is only in this manner that unclassified diseases are kept track of and intelligently dealt with.

IS IT A VEGETABLE TOXICUM?

By DR. J. C. MEYERS, Sr., V.S., Cincinnati, O.

(A paper read before the Ohio State Veterinary Medical Association.)

My attention was attracted by a report in the daily papers of a disease, apparently caused by poison, among dairy cattle in a suburb of Hamilton. As the papers stated, twenty-five out of a herd of sixty, died.

Being interested, I telephoned to a regular veterinarian of Hamilton, but nothing further could be learned, as he was not the veterinarian in charge.

I was inclined to believe that some infection or contagion might be the motive for keeping the affair secret, to prevent interference from the sanitary police, etc.

As it is the duty of the Live Stock Commission to investigate and prevent the spreading of transmissible diseases, my son, assistant State veterinarian from this district, who was unable to go, and immediate action being necessary, requested me to look into the matter.

On the morning of December 18, 1893, I arrived at the dairy farm. Notwithstanding my haste, I was far behind hand to find any trace of the source of the emergency, and was obliged to be satisfied with anamnestic reports; this was not surprising to me, however, as it is customary, when anything occurs in a dairy establishment, which is likely to create alarm, the manager will soon arrange it so that disinterested parties will not become initiated with the affairs within. Really such precaution is excusable policy.

The owner, as well as one of the attending practitioners, who happened to be present, willingly showed me the five animals still on the sick list. Credit must be given to Dr. H., who is an empiric, in that he did not overdose his patients with digitalis, belladonna, aconite, etc., which were administered; on the contrary, he undoubtedly rendered satisfactory services by reason of his being cognizant of the efficacy of these drugs.

One cow, an Alderney (under treatment by another doctor), was found in a comatose condition, which might have given rise to the suspicion that the animal was influenced by narcotics, had I not known that her palsy-like manifestation was a frequent sign of toxical diseases.

This Alderney is now sick thirteen days, and cannot get up since the fourth day; lies on the right side, and we may say is motionless. Upon touching the eye-ball, she shows but little reaction, her sight seems to be impaired and the corneas pellucidæ have lost their lustre. The buccal membrane and tongue are ashen gray and besmeared with a greasy-looking mucus. Respiration 12° , circulation 56° , and scarcely perceptible, as is

also the heart beat; peristaltic very feeble, slightly tympanitic. This cow died on the following day.

Post-mortem examination fourteen hours after death. Carcass rigid, not tympanitic. Upon dividing the abdominal covering, the blood-vessels discharged black semi-liquid blood, the gas emitted from the abdomen was of an extremely bad odor; no serum escaped from this cavity, nor from the thorax. Bowels looked bluish, contents greatly diminished, soft and of a disagreeable smell. Rumen filled with half masticated hay, notwithstanding the cow refused all but liquid nourishment, with which she was drenched for nine days. Mesenterium spotted with ecchymosen between its leaves, perhaps one-half dozen in number and ranging in size from a pea to a cherry. Reticulum occupied by a handful of grayish mushy food. Omasum, which was diminished in circumference, was nearly empty, only a few cakes ready to fall apart were found; the epithelium which still adhered to its leaves was of a dark brown color. Abomasum greatly contracted, mucosa besmeared with about one-half pint of semi-liquid, grayish, offensive compound. Small intestines nearly all empty, lining of a bad color and smell. Large intestines also contained much less than usual, the color and consistency resembling yeast. Spleen reduced in size, its surface ashen gray, pulp of a somewhat purplish tinge. Liver also diminished, flabby, of a putrid odor and soft, approaching decay. Gall-bladder two-thirds full of bile, molasses-like in appearance. Kidneys a trifle softer. Both substances united in color, appear melanæmic. Fatty tissue was nowhere to be found. The exterior and interior of the heart of a dark-reddish aspect; its ventricles and auricles thoroughly filled with dark-purplish coagulated blood. There was a scarcity of blood everywhere else. The lungs were the best preserved organs of all; the right lobe slightly darker colored, front end looked rather fleshy, but would float.

Being obliged to meet another engagement at a certain time, I could not remain any longer, consequently the skull and spinal cord, which might have furnished the most decisive disclosure in this problematic question, were not opened.

The nourishment, consisting of gruel and flaxseed meal tea and medicines, all of which the cow received in drench form for nine days, seemed to have the effect of ridding the reticulum, omasum and abomasum of accumulated food, which stomachs, as stated above, were nearly empty, and looked as if they were washed out. The rumen, on the contrary, was so full of coarsely masticated hay that it might be called overloaded, notwithstanding the fact that not a particle of solid food was added to it ever since the cow got down.

A remarkable feature to me, was the contrast between the fullness of the rumen and the emptiness of the other three stomachs. Why the contents of the rumen was not more softened is also singular, but Professor Pott informs us that part of the liquid which ruminants drink enters first into the reticulum, and from there into the rumen; and the rest, by means of the œsophagus groove into the omasum and abomasum. When the animal is capable of a full swallow, which is from 500 to 700 grams, the greater part will flow into the first two stomachs. Judging by the above explanation, the rumen in this case did not receive its share, as in drenching the swallows are small, in fact it is doubtful whether the cow was able to swallow at all, as the pharyngeal muscles are commonly paralyzed in cattle afflicted thus, when drinking is impossible, but liquid food, if carefully administered, will reach its proper destination.

Another cow, four years old, of Holstein breed, is thin in flesh, as most of her companions; has not eaten much since she first took sick ten days ago; a foam-like saliva drips from the mouth; eyes squint, bulbus nearly normal. Coughs often and forcibly; respiration 16° , circulation 50° , vesicular murmur a little heavier and plainer. Stands and moves about without showing much weakness. When standing, the muscles of the posterior extremities shiver, which is not perceptible when lying down, nor can any pain be detected by palpitating that region. Discharge from bowels regular, but in small quantities. Appetite improving. Rumination has not yet set in, nor has the production of milk.

The other three animals have so far convalesced that therapeutics are discontinued, judicial care being considered fully sufficient to restore them.

At the outset I suspected contagion or infection to be the agent of this loss, but the symptoms failed to verify such a supposition, consequently the cause must be attributed to the food, consisting of corn, cornstalks, hay and malt, which the cattle had been fed on some days prior to their taking sick.

Dr. H. claimed the hay could not have been better, but as the cattle had not received any for a week or more, they ate hastily, not chewing it properly. The malt, which was all consumed, had been stored through the summer and may have been defective. The stablemen did not consider the cornstalks faulty, but allowance must be made, as these people do not attach much importance to quality.

I was suspicious that the stalks, not a vestige of which was left, was tainted with *ustilago maidis*, the poisonous virus generally hidden either in corn, cornstalks, meadow-grass or hay, which, when eaten, is very apt to attack the sensorium and spinal cord almost simultaneously with the ganglion nerves, developing such ailments with but few if any premonitory signs.

The herd of cattle, together with another lot, were watered from the same creek, and not one of the latter took sick, a proof that the food alone is responsible for the harm done.

Dr. H.'s description of some of the symptoms of the cattle which died within the first twelve hours, is as follows: They would become wild and frantic, break chains and ropes with which they were tied; rear, plunge about, fall down; roar, bawl, and moan piteously, and discharge a dry manure every little while until death relieved them.

We are aware that these symptoms are not characteristic. Some of them are often exhibited in suffocation, brought on by tympanitis. But Dr. H. says that none of the animals under his charge were tympanitic enough to produce suffocation.

If we would have had but one case to judge by, it would have been a difficult task to find criterions upon which we could

depend, but when three, four and more turn up with similar symptoms, they may be diagnosed as related to ustilaginun poisoning.

Professor Frochner's "Toxicologie for Veterinarians," contains a description of symptoms and post-mortem results, caused by ustilago toxicum, which corresponds with cases I have had opportunity to observe several times, leading me to believe that this malady belongs in the same category. Frochner claims that the opinion prevailing to some extent, that the entrance of the poisonous spores into the blood circulation takes place in a physical manner, is erroneous; but that it is effected by the formation of a ptomainlike body, which besides irritating the mucous membrane has the additional property of paralyzing the pharynx and spinal cord.

In order to satisfy themselves as to the certainty of the fatal termination of cattle upon eating ustilago maidis, a few experts made trials with this parasitic fungus, but instead of producing death, as was the case of those which partook of it accidentally, the gestation organs were influenced to such a degree that abortus followed.

According to the results of these experimental attacks upon the system, it appears that under certain, as yet inexplicable circumstances, the gestation organs are more susceptible to the poisonous virus than the sensorium and its membranes.

HOMOEOPATHY IN VETERINARY PRACTICE.

By Prof. C. E. SAYRE, M.D., D.V.S.,

(A paper read before the Illinois State Veterinary Medical Association.)

(Continued from page 768, and concluded.)

Enough of the history of homœopathy. The practice of homœopathy in the veterinary profession has been confined to unqualified practitioners and stable men almost exclusively. And what seemed very strange to me was, that when intro-

duced into a stable, with very few exceptions, it was always used. The following statistics of one large stable had considerable weight with me in deciding to investigate homœopathy :

<i>Years.</i>	<i>No. of Horses.</i>	<i>No. of Deaths.</i>	<i>Per Cent. of Loss.</i>	<i>Method of Treatment.</i>
1881	90	5	5 1-2	Veterinarian employed.
1882	92	5	5 4-10	" "
1883	92	None.		" "
1884	104	3	2 8-10	Both methods of treatment.
1885	106	1	9-10	Homœopathic treatment.
1886	112	None.		" "
1887	112	2	1 7-10	" "
1888	120	2	1 6-10	" "
1889	120	4	3 2-10	Two under allopathic treatment.
1890	120	2	1 6-10	One broken back.
1891	120	1	8-10	Treated allopathically.
1892	120	None.		Homœopathic treatment.
1893	130	1	8-10	" "
1894	113	None.		

The cases treated allopathically were taken away sick from the stable, and a veterinarian called.

On examination of this table we find that the percentage of loss is greatly in favor of homœopathy. The objection to this may be raised that there were only three years of statistics under allopathic treatment, while there are nine years of homœopathic treatment. If we take the worst three years, 1888, 1889 and 1890, two deaths under homœopathic treatment for each year, we find that the percentage is still greatly in favor of homœopathy, as there are but six deaths, to ten in the three years under allopathic treatment. Then, too, we must take into consideration that these animals were not treated homœopathically by a professional man, but by the superintendent of the stable.

Another large stable, averaging one hundred head of horses, have treated their own stock for the past ten years, but have not kept a record of their losses ; but the superintendent tells me that, from memory, they have lost one to where they lost eight allopathically, and they employed one of the best veterinarians

in Chicago. The superintendents of both were not believers in homœopathy when it was first used in their stables, but the loss was so much less that they were compelled to adopt it. They are now both staunch homœopaths.

In my own practice I have not kept any record whereby I can give any statistics. But I have certainly met with remarkable successes. During the winter of 1892 and 1893 I treated twenty-nine cases of azaturia (which under allopathic treatment we expect to lose 75%) homœopathically, and lost four. The winter of 1893 and 1894 I treated thirteen, and lost none. This winter I have treated but two, and lost both; one of these, a large 1,800 pound horse, laid in a stone quarry all night, and had been down twenty-four hours before I saw it. He improved considerably, and got so he could walk about for fifteen minutes at a time, but the bruising he received on the stones caused immense sloughs in his shoulders and hips, which, I think, was the cause of death.

For three years I have treated all cases homœopathically, with the exception of some few cases of colic, which had received large doses of opium before my arrival, when I have found it necessary to administer a cathartic to counteract the effect of the opium. In the three years I have not found it necessary to use a trochar more than once on the same patient, except in one case, as the homœopathic remedy prevented the further formation of gas, and all cases have been ready to work the next day (except those mentioned which had received a cathartic), as there was no drug disease to recover from. I have lost some cases, but very few; on three of those I have held post-mortem examinations; two had ruptured stomachs, and one a ruptured colon.

Colocynth and carbo-vegetabilis are the remedies most frequently indicated in colic. In the proving of colocynth we find "gripping in the epigastrium, cramps in the stomach, pain relieved bending double, abdomen distended, tympanitis, incarcerated flatus, diarrhœa, stool accompanied by a great discharge of wind." Some of these symptoms are to be found in nearly

all cases of colic, and colocynth will relieve nine-tenths of them, and very quickly.

In those cases of gastric flatulence in which the gas is in the stomach, and cannot be reached with a trochar, the horse constantly retching and eructations of gas, I have found the carbo-vegetabilis acts like magic.

In the provings of carbo-vegetabilis we find "colic, with flatulence, *stomach full to bursting*, abdomen distended."

A few years ago I was called in consultation in a case of impaction of the colon, which seemed hopeless. The patient had received large doses of cathartics, with anodynes, but the pain kept up. A short time before my arrival the attending physician had given a mixture, which contained a drachm of the fluid extract of gelsemium, alcohol and some other remedy, which I have forgotten, in an eight ounce mixture, giving one-half ounce every half hour. The dose of gelsemium in this mixture was about four minims, certainly a very small dose for a horse. I made some such remark at the time; the doctor agreed with me, but said the patient seemed to be relieved more by this mixture than anything he had given, and that he had administered it before with good results. The patient recovered.

I thought very little about it until shortly after I began the study of homœopathy I was called one evening, about 6 o'clock, to see a valuable two-year old colt, which I found lying at full length, looking occasionally at his side; pulse 44, temperature normal. On inquiry, I found that his bowels had not moved all day, and peristaltic movements could not be heard; so I made a diagnosis of impaction of the colon. The next thing was a homœopathic remedy for the case. He had drank no water for twenty-four hours. Here was a good symptom, *thirstlessness*. I could think of only four remedies in which this was a prominent symptom: gelsemium, pulsatilla, nux moschata and apis; so I concluded it must be one of these. I happened to think of the case in which the small dose of gelsemium had been given; this made me decide on gelsemium.

I must confess that it was with some misgivings I put a few drops in a four-ounce bottle, and ordered a half ounce every half hour until my return, which I did in about four hours, and found my patient up and eating hay. Before leaving I cautioned the groom to call me during the night if he showed evidence of pain. I called about 9 A.M. the next day, and found him comfortable, having eaten a bran mash, pulse 40, but no movement from the bowels. This was puzzling, as he had now gone twenty-four hours without a movement. I was strongly tempted to give a laxative and enemas, but reasoned if the trouble is not being relieved the pain he showed last night would have increased, he would not eat, and the pulse would be higher instead of lower. So I concluded to let him alone. About 9 P.M. his bowels moved naturally, and he was apparently as well as ever. This is a fair description of at least a dozen cases.

All cases of impaction do not exhibit these symptoms, but a great majority of them do. The great difficulty in treating animals homœopathically is the lack of symptoms which are characteristic of a remedy. Frequently we have to prescribe on one or two characteristics, whereas in human practice one can always get at least three and often a dozen symptoms, which the patient can tell. It is the symptoms of the individual case on which the homœopathist makes his prescription. It is not enough to know that a horse has pneumonia. The thirst or lack of it, the period of time in which he is better or worse, color of nasal discharge, if any, temperament, etc., all assist in making a homœopathic prescription.

The proving of remedies have thus far been on healthy persons. Before homœopathy can attain its greatest usefulness in veterinary practice, remedies will have to be proven on all of the different animals. Doubtless the symptoms are the same with many remedies, as we have found they must be in our practice, prescribing on symptoms developed in man. But there must be some differences which may account for failures in some cases.

I have treated seven cases of tetanus that I can remember homœopathically, and lost one.

I have treated several cases of purpura hæmorrhagica, and lost one, and could mention many more diseases, but this is sufficient.

A few more peculiar cases to be mentioned, and I will close :

A black dog, of uncertain breed, was brought to me, suffering from sciatic rheumatism he had had for five months, having been under treatment by two prominent veterinarians. For a month nothing had been done, as the case was considered hopeless. The entire right leg was greatly atrophied. I could get no symptoms at all peculiar, so I gave the lady that brought it a few powders of sugar of milk, and told her to call again in three days. I read everything I could on sciatica, and found in the proving of dioscorea (wild yam): "Pain in the right leg, from point of exit of sciatic nerve, felt only on moving limb."

When the patient returned there was no improvement. I then gave dioscorea, and told the lady to call in a week. She reported that improvement began in four days, and he was then perfectly well. The muscles have since developed, until now the leg is natural. The same lady had a small terrier that had been vomiting for several days. The only thing peculiar about it was that every time it drank it induced vomiting, and there was great thirst. This I thought was a clear case for arsenic, for we find, in proving of arsenic, "great thirst, vomiting aggravated by drinking cold water." I gave arsenic, but to my surprise, was telephoned for the next day to call and see the dog, which had not improved. On careful questioning, I found that the vomiting did not occur until about fifteen minutes after drinking. In the proving of phosphorus we find "great thirst, *vomiting of water as soon as it gets warm in the stomach.*" Phosphorus was given, and that was the last of the vomiting, as I called the next day to inquire.

One evening I was called to see an English setter bitch that had been in labor for fourteen hours. She was lying completely exhausted; there were occasional twitchings of the muscles of the face and body. There had been no pains for

several hours. I made a digital examination, but could feel nothing, as none of the pups had entered the superior strait. In the proving of nux vomica we find "twitchings of the muscles of the face, pulse imperceptible, labor pains cease." Nux was the prescription, and I told the owner I would return in about an hour with forceps. It was about an hour and a half before I returned. The owner met me, smiling, saying about fifteen minutes after I left she seemed to brighten up, the pains returned, and in about half an hour the first puppy was born, and when I arrived she had five.

Hoping that what I have written will induce you to investigate homœopathy, before you condemn it, I will close with a quotation from Dr. Sharp:

"We are not entitled to reject anything which professes to be a *fact*, if supported by a sufficient amount of evidence, merely because it is inconsistent with our expectations; it does not coincide with our previous opinions, or is not within the limits of our former experience." *

TETANY; OR, REFLEX NERVOUS IRRITATION.

By Dr. T. J. GUNNING, D.V.S., Neponsit, Ill.

(A paper read before the Illinois State Veterinary Medical Society.)

In presenting this subject I may not be presenting anything new to most of the profession, and yet to some it may be of interest, especially to the younger practitioners. Tetany is altogether different from tetanus, and I think is not mentioned by any of our veterinary text-books, so far as I know, and I have used the name given by some of our ablest human practitioners. Tetany is strictly a reflex condition, while tetanus, I believe, to be a direct irritation of the nerves.

* *The Small Dose of Homœopathy.* By Dr. Sharp.

Tetany is a condition peculiar to young animals, and but seldom seen in old horses. When seen in old animals it will be likely to puzzle the ablest practitioner to locate the cause. If the veterinary practitioner will keep in mind the fact that nervous irritation is the cause of many conditions which are hard to diagnose correctly, he will bring credit to himself by curing the obscure conditions which other doctors have failed to remove. The irritating cause is often quite distant from the part affected, and may be the last place the doctor would think of looking for the cause. I have devoted some time to the study of this condition, and have made close observation for several years, especially in diseases of the eyes.

Veterinarians have made sport of me when I told them that nine cases out of ten, where the eyes were affected in young horses, was due to reflex nervous irritation, the cause generally being the teeth.

Some of those doctors have been converted, and have told me that I was right, that they had been trying to cure ophthalmia without success, and then their patients had been placed under my care and I had treated them with a pair of forceps and sent them home cured without using any medicine, and they could not afford to lose their reputation and practice in that way. I have had men bring horses many miles to me, saying that they had heard that I was an eye specialist, and they had tried Dr. so-and-so, but he could do the horse's eyes no good, and they would leave the horse with me if I thought I could help his eyes. I generally let the owner take the horse home with him, as it is only another case that Dr. so-and-so had been treating for ophthalmia when he ought to have been treating the teeth with a pair of forceps or a gum lance.

In June, 1893, I was called to see a horse belonging to an old horse doctor, a man who had practiced for over thirty years. I found the horse in a box stall, almost unable to move, with back arched, hind legs wide apart and the picture of misery. I think any doctor would have said from the looks of the horse, that it was a very bad case of nephritis. I took the pulse and

temperature and found both nearly normal. This was a stunner, and at once set me to thinking. I asked the owner how long the horse had been in that condition, he said only a few days, but had been getting worse all the time; he said there was no trouble with the bowels or kidneys that he could see, as the horse voided his urine all right and the bowels moved free enough for any horse. I asked if the horse had been hurt in any way: he said no, he thought not, but had been castrated some three or four weeks ago. I at once thought of tetany, and made an examination and found that the wound was not quite healed, also found that both spermatic cords were held down to the scrotum by adhesions, the operation having been done with clamps. I told the old doctor that it was a case of tetany, and I would have to relieve the cords from their strained condition and attachment to the scrotum. The old doctor did not take much stock in my diagnosis, but as he offered no objections, I at once proceeded to operate; after liberating both cords from the scrotum, I inserted my finger into the inguinal canal as far as possible to make sure that both cords were perfectly free, I then bathed the wound with warm water and dressed with carbolyzed oil. I then told them to take off the halter and let the horse go out into the yard if he could; somewhat to my own surprise, and still more to the old doctor's, the horse turned round and walked out into the yard, went to the water-tank, got a drink, and in a few minutes went to the pasture with the other horses. The old doctor said he had learned something worth knowing. I charged him ten dollars and came home feeling well satisfied, and also leaving the old doctor as well satisfied as myself. I might write much more on this subject, but think I have written enough to bring this peculiar condition to your notice. Perhaps some of you may not agree with my views, and will call me a crank as other good doctors have done, but it will be all right so far as I am concerned. I believe that if you will study and watch your cases in practice, you will be convinced as others have been, and I hope you will, and then give your experience at our next annual meeting.

SOME EXPERIMENTAL RESEARCHES ON THE USE OF MALLEINE.

By PROF. A. LIAUTARD, M.D., V.M.

A paper presented to the Congress of Hygiene at Buda-Pest.

(Continued from page 752, and concluded.)

17th Observation. GLANDERS.—The same subject was used in testing another kind of German malleine :

June 13,	8 A. M.,	temperature	103 2-5.	—Receives 5 cc. of German malleine.
" "	10 "	"	103 3-5.	
" "	12 "	"	103 3-5.	
" "	2 P. M.,	"	104.	
" "	4 "	"	104 1-5.	
" "	6 "	"	104 1-5.	
" "	8 "	"	104 1-5.	
" "	10 "	"	104 1-5.	
" 14,	8 A. M.,	"	102 3-5.	—He is destroyed.

The swelling at the seat of injection was smaller, less painful and not as warm as in the preceeding test.

18th Observation. COLD ABSCESS WITH SUPPURATIVE LYMPHANGITIS ; SUSPICIOUS OF FARCY.—Brown gelding, 9 years old ; has at the base of the neck, left side, a cold abscess with lymphatic cords extending on the shoulder, which have ulcerated in two places ; he has also a lymphatic abscess on the middle of the shoulder. Admitted on the 19th of June, 1893 ; he received 5 cc. of German malleine on the 22d :

June 19,				6 P. M., 103 1-5.
" 20,	8 A. M.,	temperature	103 2-5.	6 " 103.
" 21,	8 "	"	102 1-5.	6 " 102 2-5.
" 22,	8:30 "	"	101 2-5.	
" "	10.30 "	"	102 2-5.	
" "	12.30 P. M.,	"	102 1-5.	—Very small swelling.
" "	2.30 "	"	102 1-5.	
" "	4.30 "	"	102 1-5.	—The same.
" "	6.30 "	"	102 1-5.	
" "	8.30 "	"	102 1-5.	
" "	10.30 "	"	101 4-5.	
" 23,	8.30 "	"	100 3-5.	—Swelling all gone.

This animal treated for his cold abscess recovered rapidly.

19th Observation. FARCY AND GLANDERS.—An old roan horse, in poor condition ; has farcinous ulcers on both hind legs

and on the body, with glairy discharge, and a small chancre on the right side. Admitted the 2d of August at 3 P.M.; his temperature registers 105 1-5°:

Aug. 3,	8 A. M.,	temperature	103.	8 P. M.,	104.
" 4,	8 "	"	102 4-5.	8 "	102 3-5.
" 5,	8 "	"	102 2-5.	—Receives 2 1-2 cc. of German malleine.	
" "	10 "	"	102 1-5.		
" "	12 M.,	"	103.	—Swelling.	
" "	2 P. M.,	"	104 4-5.		
" "	4 "	"	105.	—Swelling increased.	
" "	6 "	"	105.		
" "	8 "	"	105 1-5.		
" "	10 "	"	105 2-5.		
" 6,	8 A. M.,	"	103 3-5.	—Swelling the same.	

Towards the end of the observation the symptoms of glanders and farcy have developed themselves very extensively.

20th Observation.—Same horse as above, in which the malleine of Roux was employed. I had it for a year and I was desirous to see if it possessed the same qualities:

Aug. 7,	8 A. M.,	temperature	102.	6 P. M.,	102 4-5.
" 8,	8 "	"	102 3-5.	—Receives 15 drops of brute malleine of Roux.	
" "	10 "	"	101 4-5.		
" "	12 "	"	101 4-5.	—Swelling as a hazelnut has increased.	
" "	2 P. M.,	"	103 2-5.		
" "	4 "	"	103 4-5.		
" "	6 "	"	103 4-5.	—Still enlarging, very painful.	
" "	8 "	"	103 3-5.		
" "	10 "	"	103 4-5.		
" 9,	8 A. M.,	"	102 3-5.		
" 10,	8 "	"	102 3-5.	6 P. M.,	102 1-5.
" 11,	8 "	"	101 4-5.	—Receives a second dose of Roux's brute malleine.	
" "	10 "	"	101 4-5.		
" "	12 M.,	"	102.		
" "	2 P. M.,	"	102 2-5.		
" "	4 "	"	104.	—In this observation the swelling was enormous and very painful.	
" "	6 "	"	103 3-5.		
" "	8 "	"	104.		
" "	10 "	"	104 1-5.		
" 12,	8 A. M.,	"	103.		
" "	12 M.,	"	103.	—Horse is destroyed.	

21st Observation. SUSPICIOUS OF FARCY.—This is a brown gelding, which has been exposed to glanders and has under the abdomen a suspicious swelling. He is admitted September 11, 1893, registering a temperature of 100° in the morning and in the evening. He is injected with $2\frac{1}{2}$ cc. of German malleine and gives the following results :

Sept. 12. 8 A. M., temperature 100.

“ “ 10 “ “ 100 4-5.

“ “ 12 M., “ 100 2-5.

“ “ 2 P. M., “ 100 2-5.

“ “ 4 “ “ 100.

“ “ 6 “ “ 100 1-5.

“ “ 8 “ “ 100.

“ “ 10 “ “ 100.

“ 13, 8 A. M., “ 100. —Not the slightest local reaction.

22d Observation. SUSPICIOUS.—An aged roan pony, in poor condition, coat staring, no discharge nor gland, a small tubercle on the left side of the septum; has been condemned as glanderous by a veterinarian.

Admitted October 26, 1893, with a temperature of $99\ 1-5^{\circ}$ at 3 P. M. and in the evening. He received that day $2\frac{1}{2}$ cc. of German malleine.

Oct. 26, 8 A. M., temperature 99 2-5.

“ “ 10 “ “ 99.

“ “ 12 “ “ 99 2-5.

“ “ 2 P. M., “ 100.

“ “ 4 “ “ 100 1-5.

“ “ 6 “ “ 100 2-5.

“ “ 8 “ “ 100 2-5.

“ “ 10 “ “ 100.

“ 27, 8 A. M., “ 99 1-5.—Has had a very small swelling that disappeared in twenty-four hours.

23d Observation. DOUBTFUL.—Black horse 7 years, has been exposed, having cohabited with three other glanderous horses which were destroyed; is in good condition, has a slight swelling on the right hind leg, the septum nasi is of a slate color and suspicious.

The temperature is normal. Admitted November 15, 1893; receives on the 16th, at 8 A. M., $2\frac{1}{2}$ cc. of German malleine.

Nov. 16,	8 A.M.,	temperature	99 3-5.
" "	10 "	"	99 2-5.
" "	12 "	"	99 3-5.—Small swelling.
" "	2 P.M.,	"	99 2-5.
" "	4 "	"	99 2-5.—Small swelling.
" "	6 "	"	99 1-5.
" "	8 "	"	99.
" "	10 "	"	99 1-5.—Swelling smaller.
" 17,	8 A.M.,	"	99 1-5.—Gone.

The normal state has returned and remains till the 23d, when he receives 1 cc. of malleine from Washington.

Nov. 23,	8 A.M.,	temperature	99 2-5.
" "	9 "	"	99 2-5.
" "	11 "	"	99. —Small swelling.
" "	1 P.M.,	"	99. — " "
" "	3 "	"	99 1-5.
" "	5 "	"	99 1-5.
" "	7 "	"	99.
" "	9 "	"	99 2-5.
" "	11 "	"	99.
" 24,	8 A.M.,	"	99. —Swelling gone.

24th Observation. SUSPICIOUS.—Bay gelding, having the same history as the preceding one, on the left side septum nasi is abeated; both hind legs are swollen, has osteo porosis; temperature normal. Admitted November 15, 1893; receives on the 16th 5 cc. of German malleine.

Nov. 16,	8 A.M.,	temperature	99 3-5.
" "	10 "	"	99 2-5.—The abrasion of the septum seems to
" "	12 "	"	99 3-5. assume the aspect of a chancre.
" "	2 P.M.,	"	99 2-5.
" "	4 "	"	99 2-5.
" "	6 "	"	100.
" "	8 "	"	100 1-5.
" "	10 "	"	100.
" 17,	8 A.M.,	"	99.

The swelling which had begun at 12 o'clock has remained small and disappeared in a few hours.

On the 18th and 19th no change, and on the 20th he receives 2½ cc. of malleine of Roux. No special manifestation, the temperature varying between 99 1-5° and 99 3-5°. Scarcely any local reaction.

On the 23d he is once more injected with malleine, 1 cc. from Washington, without any better results or reaction.

The three kinds of malleine have answered in the same manner.

25th Observation. SUSPICIOUS.—A large brown gelding, in excellent condition, has been exposed, has repeated attacks of epistaxis; is admitted to the hospital December 15, 1893, with a temperature of $100\ 1\text{--}5^{\circ}$, in the evening of 100° . The 16th he receives 1 cc. of malleine from Washington.

Dec. 16, 8 A.M., temperature 100 .

"	"	10	"	"	99 4-5.
"	"	12	"	"	99 4-5.—Swelling of the size of an egg.
"	"	2 P.M.,	"	"	99 4-5.
"	"	4	"	"	99 4-5.
"	"	6	"	"	99 4-5.
"	"	8	"	"	99 4-5.
"	"	10	"	"	99 4-5.
"	17,	8 A.M.,	"	"	99. —Swelling gone.

26th Observation. GLANDERS.—Large gray gelding, belonging to a brewery, has been sickly for two or three weeks; irregular appetite; variations of temperature between 101° and 103° . January 19, 1894, has a slight œdematous swelling of the maxillary glands, a small tubercle on the left side of the septum, the left hock is swollen. On the 20th the tubercle of the septum has ulcerated and another is developing further up. On the 21st the temperature is 102° in the morning and evening; the 22d it has raised to 103° , and he receives then 1 cc. of malleine from Washington.

Jan. 22, 8 A.M., temperature 103 .

"	"	10	"	"	$102\ 4\text{--}5$.
"	"	12	"	"	103 . —Small swelling.
"	"	2 P.M.,	"	"	$103\ 1\text{--}5$.
"	"	4	"	"	$103\ 2\text{--}5$.—Increased and painful.
"	"	6	"	"	$103\ 3\text{--}5$.
"	"	8	"	"	104 .
"	"	10	"	"	$104\ 2\text{--}5$.
"	"	12	"	"	$105\ 1\text{--}5$.
"	23,	8 A.M.,	"	"	$103\ 4\text{--}5$.—No change.

Post-mortem.—Enormous lesions in the back part of the nasal cavities, some tubercles in the lungs, small pneumonic spots in the right lung.

27th Observation. GLANDERS.—Bay saddle horse; discharge on the right nostril, no gland, septum nasi thick and glairy, small chancre under the false nostril; temperature 100° when admitted. January 22, 1894, it rises to $101\ 3\text{-}5^{\circ}$ in the evening. On the 23d he receives 1 cc. of malleine from Washington.

Jan. 23,	8 A.M.,	temperature	103 .
" "	10 "	"	$103\ 2\text{-}5$.
" "	12 M.,	"	$103\ 1\text{-}5$.—Large swelling.
" "	2 P.M.,	"	$103\ 3\text{-}5$.
" "	4 "	"	$103\ 1\text{-}5$.
" "	6 "	"	$103\ 2\text{-}5$.—Still larger and painful.
" "	8 "	"	103 .
" "	10 "	"	$103\ 3\text{-}5$.
" "	11 "	"	$103\ 3\text{-}5$.
" 24,	8 A.M.,	"	$101\ 3\text{-}5$.

Post-mortem.—Enormous quantity of tubercles in both lungs, large chancre on the arytenoid left cartilage, some on the back part of the nasal cavities.

28th Observation. SUSPICIOUS.—Another saddle horse, coming from the same stable as the preceding; has the lymphatus of the flat of the left hind leg, painful to the touch; is in poor condition, anæmic; temperature of 103° . When admitted had on the right side of the neck a swelling and two or three lymphatic cords under the abdomen. On February 4, at 8 A.M., the temperature is 103° and he receives 1 cc. of malleine from Washington.

Feb. 4,	10 A.M.,	temperature	102 .	—Small swelling.
" "	12 "	"	$102\ 1\text{-}5$.	—Larger.
" "	2 P.M.,	"	$102\ 3\text{-}5$.	
" "	4 "	"	$102\ 3\text{-}5$.	—Larger; quite painful.
" "	6 "	"	$104\ 2\text{-}5$.	
" "	8 "	"	$105\ 2\text{-}5$.	—Very large and painful.
" "	10 "	"	$105\ 1\text{-}5$.	
" 5,	8 A.M.,	"	102 .	—Swelling somewhat smaller.

The suspicious symptoms of farcy seem improved, but after twenty-four hours assume a more severe aspect; farcinous cords, buttons, chancres, all seem aggravated by the effect of the malleine.

29th Observation. GLANDERS.—Charley is a handsome gray horse of a brewery, in excellent condition, has a running and an ulceration very suspicious; he is kept in an infield stable. The temperature varies between 101° and 103° . On February 6th, in the evening, he registers on the thermometer 105° , on the 7th, at 8 A.M., $104\ 1-5$, and he then receives 1 cc. of malleine from Washington.

Feb. 7,	10 A.M.,	temperature	104 .
" "	12 M.,	"	104 .
" "	2 P.M.,	"	$104\ 3-5$.
" "	4 "	"	105 .
" "	6 "	"	$105\ 2-5$.
" "	8 "	"	$105\ 3-5$.
" "	10 "	"	$106\ 3-5$.
" 8,	6 A.M.,	"	105 .
" "	8 "	"	105 .

30th Observation. GLANDERS.—Jack comes from the same stable, has the same history; he is in worse condition, has three small ulcers on the left side of the abdomen, a running of suspicious nature at the nose, and variations of temperature. On February 6th it is $102\ 2-5^{\circ}$, the 7th, at 8 A.M., 102° ; he receives also 1 cc. of malleine from Washington.

Feb. 7,	10 A.M.,	temperature	$102\ 2-5$.
" "	12 M.,	"	$102\ 3-5$.
" "	2 P.M.,	"	103 .
" "	4 "	"	103 .
" "	6 "	"	$104\ 1-5$.
" "	8 "	"	$104\ 1-5$.
" "	10 "	"	$104\ 3-5$.
" 8,	6 A.M.,	"	$103\ 3-5$.
" "	8 "	"	$103\ 3-5$.

These two last horses were destroyed. The local reaction was only moderate.

31st Observation. GLANDERS.—This chestnut gelding comes from the same stable as those of observations 27th and 28th. He is in bad condition, coat staring, very little running at the nose, no chancre, no gland, mucous of the septum has some abrasions. The temperature varies between 100° and $101\ 3-5^{\circ}$. This condition has existed for the last three weeks; a tonic treatment has been without result. He is placed in observation on April 10, 1894, and on the 12th he receives $2\frac{1}{2}$ cc. of malleine of Roux recently imported.

April 12,	9 A.M.,	temperature	$100\ 2-5$.
" "	11 "	"	$100\ 4-5$.
" "	1 P.M.,	"	$101\ 1-5$.
" "	3 "	"	$101\ 3-5$.
" "	5 "	"	$100\ 3-5$.
" "	7 "	"	$103\ 4-5$.
" "	9 "	"	$103\ 4-5$.
" "	11 "	"	$103\ 4-5$.
" 13,	8 A.M.,	"	$102\ 3-5$.
" "	9 P.M.,	"	$102\ 3-5$.
" 14,	8 A.M.,	"	$101\ 3-5$.

The swelling appeared at 1 o'clock; has rapidly increased; has become warm, painful; at 5 o'clock the horse has had chills. The swelling disappeared only on the fifth day.

The general condition of this horse remained from that day about the same, and he was then submitted to a treatment of iodide of potash, of which he received three and four drachms three times a day, without any other effect but a slight lacrymation. After having taken two ounces of iodide without any apparent modifications, he receives May 1st $2\frac{1}{2}$ cc. of malleine of Roux, which was followed by a rising in the temperature of $104\ 3-5^{\circ}$. On May 2d the thermometer had dropped to $102\ 2-5^{\circ}$. On the 3d, 4th, 5th and 6th everything is normal. On the 7th the thermometer registers 101° ; he receives $2\frac{1}{2}$ cc. of tuberculine from Roux.

May 7,	10 A.M.,	temperature	$101\ 4-5$.
" "	12 M.,	"	103 . —Well marked swelling.
" "	2 P.M.,	"	$101\ 3-5$.—Largely developed; animal very nervous.

May	7,	4 P.M.,	temperature	101 4-5.
"	"	6 "	"	102 1-5.—Swelling large and painful.
"	"	8 "	"	104 2-5.
"	"	10 "	"	104. —Animal very nervous and afraid.
"	8,	8 A.M.,	"	100.
"	"	8 P.M.,	"	102. —Swelling smaller.

The 9th everything is normal.

His condition remains the same until the 13th, when he received $2\frac{1}{2}$ cc. of malleine prepared at the laboratory of Pasteur Institute of New York, by Dr. Gibier. The injection was made in the evening at 11 o'clock, the thermometer registering 101 3-5°.

May	14,	6	A.M.,	temperature	104 3-5.
"	"	8	"	"	104 4-5.
"	"	10	"	"	103 3-5.
"	"	12	M.,	"	104 2-5.
"	"	2	P.M.,	"	103 3-5.
"	"	4	"	"	104 1-5.
"	"	6	"	"	103 4-5.
"	"	8	"	"	103 1-5.
"	"	10	"	"	103 1-5.
"	"	11.30	"	"	103.
"	15,	6	A.M.,	"	102 3-5.

The swelling following the injection has run through the same condition; well marked at 6 A.M., it has become large, very large, warm, painful, with lymphatic cords, the animal has been very nervous and cranitive.

At the post-mortem the only lesion found consisted in a certain number of tubercles through the thickness of the lungs mixed with some of the translucide kinds of wound.

Glanderosus by the malleine and by the post-mortem, yet Dr. Gibier failed to obtain affirmative results by the cultures on potatoes of the contents of the tubercules from the lungs.

32d Observation. SUPPURATIVE LYMPHANGITIS. — A bay mare, 7 years old, convalescent of a severe attack of distemper, is found one morning with a swelling of the left thigh. She has afterwards all the symptoms of an attack of lymphangitis on that leg, and one morning a small excoriation of the coronet, from which escapes a small quantity of pus. She is admitted to the

hospital on April 16th, in fair condition, with good appetite and a temperature which varies between $102\ 3\text{-}5^{\circ}$ and $104\ 4\text{-}5^{\circ}$. The lymphangitis has given rise to the formation of numerous abscesses inside and outside of the leg. Are they farcinous? On the 19th of April she has a temperature of 103° and receives $2\frac{1}{2}$ cc. of Roux's malleine.

April 19, 10 A.M., temperature 100.

"	"	12 M.,	"	102 1-5.—Small swelling.
"	"	2 P.M.,	"	104 2-5.—Larger.
"	"	4 "	"	103 2-5.
"	"	6 "	"	100.
"	"	8 "	"	105. —Swelling diminishing.
"	20,	8 A.M.,	"	103 1-5.
"	"	12 M.,	"	104 4-5.
"	"	4 P.M.,	"	101 2-5.—Swelling gone.
"	"	8 "	"	101.
"	21,	8 A.M.,	"	100.

The lymphangitis continued its course and became more and more severe, the abscesses more numerous and varying in size, the general condition suffered soon from it and the animal was destroyed. The autopsy revealed a suppurative lymphangitis of the whole leg, in which the vessels and glands, superficial and deep, were involved, and all the seat of a suppurative inflammation more or less extensive.

33d Observation. SUSPICIOUS.—Brown gelding of 7 years, belonging to a circus, has had several attacks of epistaxis, without any cause; he is admitted April 17, 1894, in good condition and submitted to a tonic treatment which seems successful. The 24th, being considered cured, he has a sticky discharge, adherent to the right nostril, increasing by degrees. Nothing else abnormal; temperature is normal. He is prepared for the malleine test, and on the 26th receives $2\frac{1}{2}$ cc. of Roux's solution.

April 26, 8 A.M., temperature 100 1-5.

"	"	10.30 "	"	100 1-5.
"	"	12.30 P.M.,	"	102 2-5.—Swelling.
"	"	3.30 "	"	103 3-5.—Swelling painful and diffuse.
"	"	5.30 "	"	103 3-5.

April 26,	7.30	"	"	103 3-5.
" "	9.30	"	"	102 3-5.
" 27,	8	A.M.,	"	98 3-5.
" "	6	P.M.,	"	102 4-5.
" 28,	8	A.M.,	"	100 4-5.—Swelling almost gone.

On May 2d, the discharge has diminished, and disappeared on the 6th, the temperature varying between 100° and 100 2-5.°

The test is applied once again May 7th with malleine of Roux.

May 7,	8	A.M.,	temperature	100 3-5.
" "	10	"	"	99 3-5.
" "	12	M.,	"	99 3-5.
" "	2	P.M.,	"	99 3-5.
" "	4	"	"	100.
" "	6	"	"	99 3-5.
" "	8	"	"	101 1-5.
" "	10	"	"	102 2-5.
" 8,	8	A.M.,	"	98.
" "	12	M.,	"	99.
" "	8	P.M.,	"	100 1-5.

In this experiment the swelling has been characteristic, warm, painful, with lymphatic cords, all of which have disappeared by the evening of the 8th. The horse has been very nervous and irritable, has had chills and uneasy; has been pawing quite a great deal.

Yet as the general reaction has been scarcely sufficient to confirm the first experiment, and as the local effect has been as positive as one could desire it, it is decided to submit him to a third test, and five days later, when everything seems to have returned to the normal state, he receives the same quantity of Roux solution on May 13th, at 10:30 P. M.

May 14,	6	A.M.,	temperature	100.
" "	8	"	"	100 3-5.
" "	10	"	"	100 2-5.
" "	12	M.,	"	100 1-5.
" "	2	P.M.,	"	100 3-5.
" "	4	"	"	99 4-5.
" "	6	"	"	99.

May 14.	8	P.M.,	temperature	100 2-5.
" "	10	"	"	100 1-5.
" "	11.30	"	"	99.
" 15,	6	A.M.,	"	99.

The swelling was very small, scarcely painful, and disappeared on the 15th.

Kept on observation for a month longer, he is submitted to a fourth test on June 12th, and gives a general and local reaction negative in all respects; the temperature varying only between 99 2-5° and 100°, and the swelling scarcely large enough to be noticed.

34th Observation. SUSPICIOUS.—Poor anæmic subject sent by the Society for the Prevention of Cruelty to Animals. Maxillary gland is slightly enlarged, some discharge from the right nostril, small abrasions on the septum. Placed on observation May 11th, 12th and 13th, without changes in his condition, he receives at 10:30 P.M. of that day 2½ cc. of solution of Gibier's malleine. From 6 o'clock A.M. of the 14th to 12 at night the temperature has varied between 100 1-5° and 99°. There has been but little local reaction, and a swelling which disappeared the next day. Returned to his owner on the 16th.

35th Observation. SUPPURATIVE PNEUMONIA.—Brown gelding of 6 years; admitted May 25, 1894, to be treated of double pneumonia, which on June 5th had passed to the suppurative stage; he is abandoned by his owner. On June 7th, while his temperature registers 103°, he receives 2½ cc. of Roux's malleine.

June 7,	8	A.M.,	temperature	103.
" "	10	"	"	102.
" "	12	M.,	"	102 2-5.
" "	2	P.M.,	"	104.
" "	3.30	"	"	105 4-5.
" "	5.30	"	"	105 2-5.
" "	6	"	"	dead.

During all the time of this observation, there has not been any local reaction, and the general elevation of temperature cannot be attributed to the effect of malleine.

REPORTS OF CASES.

MALLEINE IN GLANDERS.

By W. SIEGMUND, D.V.S., House Surgeon, American Veterinary Hospital.

Although a great many reports as to the diagnostic value of malleine have been published, I may be allowed to report the following case :

A brown gelding, 10 years of age, was brought to the hospital for scientific purposes. The animal, to all external purposes, although not sound in limbs, exhibited all signs of health; the eyes bright, pulse, respiration and temperature normal. Visible mucous membranes of the normal, rosy red, smooth, glistening appearance. Lymphatic glands of the inter-maxillary space normal. Appetite and thirst normal, defecation and micturition normal.

As is customary, animals secured for the special purpose of obtaining a therapeutic agent, are subjected to the test of malleine, to insure against the presence of latent glanders. The animal in question was injected with malleine at 10 o'clock one evening, the temperature being normal, 99 3-5° F.

Twelve hours after, the following morning at 8 A. M., the temperature registered 104 1-5° F., with an accelerated pulse, irritability, and a swelling several inches in diameter at the point of inoculation. The temperature varied from 103° to 104 2-5° during the day, returning to normal the following day. The swelling subsided, the membranes remaining clear.

Being a suspicious case, the animal was again subjected to the test at 10 o'clock in the evening, the temperature and pulse being normal.

The next morning at 8 o'clock the animal presented a pitiful appearance. Anxious expression, dilated pupils, nostrils dilated, mouth hot and dry, large swelling at the seat of inoculation, back arched, flank tucked up; difficult and painful defecation of hard dry faeces, driveling of viscid, highly colored urine, slight swell-

ing of the near hind leg and sheath, extreme irritability, loss of appetite, excessive thirst, harsh staring coat. The temperature registered $104\ 2\text{--}5^{\circ}$ F., the pulse 70, the respiration 30. This condition continued during the day and evening, temperature varying between 103° and $105\ 1\text{--}5^{\circ}$ F., accompanied with gradually increasing prostration, the animal being loath to move, almost falling down when compelled to do so.

No swelling was found in the inter-maxillary space, no discharge from the nose, no eruption on the mucous membranes.

The following day the temperature registered 103° F., the swelling at the seat of inoculation had become enormous in size, very hot and painful. Gradual increase in the swelling of the near hind leg and sheath.

The animal was condemned as suffering with glanders, and destroyed.

The post-mortem examination revealed that malleine had told the truth.

The mucous membrane of the turbinated bones exhibited only a small spot of recent eruption, that of the larynx, trachea and bronchia being apparently normal. The lungs, however, contained a few well-developed tubercles, but the entire structure was studded with an immense number of small hard tubercles of the size of the head of a small pin, granular, and of most recent formation—characteristic of pulmonary latent glanders.

With all its apparent symptoms of perfect health, this horse was most certainly unfit for the object he was bought for, *viz.*, the preparation of diphtheritic anti-toxine.

PSEUDO-CHOREA.

By D. S. WRIGHT, D.V.S., New York.

DEAR DOCTOR:—Perhaps this case may prove of some interest to your readers as an illustration of pseudo-chorea in dogs:

I was called a short time ago to see an Irish setter about six months old, which his owner stated, has frequent fits. I watched him carefully, but could notice nothing abnormal about him, and

two days later I was informed that he was worse, and that the owner had made up his mind to have him destroyed. He was sent to me, and after careful consideration of his symptoms I concluded that he had chorea. His temperature remained normal, as also the pulse and all the rest of his bodily functions, with the exception that he had a twitching of all the muscles of the body, mostly marked in the hind extremities; they would twitch to such a degree as to make him jump forward. He also had a peculiar cry, a kind of howl, which he would keep up day and night, the consequence being that several neighbors complained, and knowing the length of time pending on recovery, I decided to destroy him and hold a post-mortem. I examined carefully every organ in the body and found no abnormality till I reached the heart, which I found to have undergone a "fatty infiltration." I carefully dissected the heart and found fourteen thread-like worms about seven inches in length ("filaria immitis"). One was in the "right auricle," and the rest in the "pulmonary arteries," and a peculiarity being that they were in groups of three.

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COMMITTEES. *Comitia Minora.*—President, W. Horace Hoskins, 3452-54 Ludlow street, Philadelphia, Pa.; Vice-presidents, J. F. Winchester, Lawrence, Mass.; T. J. Turner, Columbia, Mo.; W. L. Williams, Bozeman, Mon.; Secretary, Leonard Pearson, 2024 Pine street, Philadelphia, Pa.; Treasurer, Jas. L.

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Committee on Diseases.—Chairman, M. R. Trumbower, 502 Third avenue, Sterling, Ill.; M. H. Reynolds, St. Anthony Park, Minn.; S. J. J. Harger, 3608 Pine street, Philadelphia, Pa.; Jno. Faust, 209 Union street, Poughkeepsie, N. Y.; R. R. Dinwiddie, Fayetteville, Ark.

Prize Committee.—Chairman, Tait Butler, Agricultural College, Mississippi; L. McLean, 14 and 16 Nevins street, Brooklyn, N. Y.

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SPECIAL COMMITTEES. *Act of Incorporation*.—Chairman, Wm. Dougherty, 1035 Cathedral street, Baltimore, Md.; J. C. McNeil, 26 Fourth street, Pittsburg, Pa.; F. S. Allen, 800 North Seventeenth street, Philadelphia, Pa.

Revision of Constitution and By-Laws.—President, W. Horace Hoskins, 3452-54 Ludlow street, Philadelphia, Pa.; Vice-presidents, J. F. Winchester, Lawrence, Mass.; T. J. Turner, Columbia, Mo.; W. L. Williams, Bozeman, Mon.; Secretary, Leonard Pearson, 2024 Pine street, Philadelphia, Pa.; Treasurer,

Jas. L. Robertson, 409 Ninth avenue, New York City, *ex-officio*. Chairman, W. B. E. Miller, 527 Penn street, Camden, N. J.; S. Stewart, 7½ St. James street, Kansas City, Kan.; Jno. M. Parker, 24 Essex street, Haverhill, Mass.

Resident State Secretaries.—C. A. Cary, Auburn, Ala; R. R. Dinwiddie, Fayetteville, Ark.; J. K. Thompson, Pueblo, Col.; H. P. Eves, 507 West Ninth street, Wilmington, Del.; F. H. P. Edwards, Iowa City, Ia.; R. H. Harrison, Atchison, Kan.; Jas. B. Paige, Amherst, Mass.; R. A. Ramsey, Mexico, Mo.; W. L. Williams, Bozeman, Mon.; H. J. McClellan, Landsdowne, Pa.

BIBLIOGRAPHY.

Veterinary Therapeutics and Pharmacology. By E. Wallis Hoare, F.R.C.V.S. (Bailliere, Tindall and Cox, London.)

English veterinarians are at last awakening to the deficiency of English veterinary literature, and of late we have been gratified with a small number of good classical and practical works, which deserve a good place in the libraries of all veterinarians. This last work of Mr. E. W. Hoare, is one amongst them. Heretofore, Finlay, Dunn, Mortan, Gamgu, Creswell, Armatage, and a few others, were the only works on therapeutics that one could consult. "Veterinary Therapeutics and Pharmacology" comes to share part in the result of the good work intended, as an introduction to these important subjects.

The work is divided into three parts, and each one into a number of chapters, the whole of it covering over 500 pages of valuable readings and interesting references.

The appendix is a concise description of the prescribing and dispensing of drugs, with quite a number of valuable prescriptions, which cannot help but be of the greatest assistance to the young veterinarian and the every day busy practitioner.

Précis de Toxicologie Vétérinaire. (Treatise of Veterinary Toxicology.) By Prof. G. Mosselman and G. Hebrant, of Bruxelles. (Asselin and Houznan, Paris, H. Lamertin, Bruxelles).

Professor Dwindiddie has lately presented the English reading veterinarian with a work on "Veterinary Bacteriology," translated from one issued by the authors of the new book on "Veterinary Toxicology," and the success obtained by the publication of Professor Dwindiddie, may prove an inducement for some one interested to translate the new work. The subject, we are sure, is comparatively new with the American veterinarians, and though we know it receives some special attention in at least one of our veterinary colleges, it is one which veterinarians cannot afford to be ignorant of.

The work, in its 372 pages, treats after a short introduction, first of general, and in a second part, of special toxicology. The first part is divided into three chapters: 1st, Physiologico-medical toxicology; 2d, Chemical toxicology; 3d, Legal medicine and classification of poisons or toxics.

In the second part, the metals and their compounds are considered: Arsenic, antimony, copper, zinc, lead and mercury, etc.; the metalloids, mineral acids, phosphorus, etc.

In the second chapter, gases and vapors are considered, and in the third the organic substances, organic acids, opium, strychnine, tobacco, belladonna, veratrum, digitalis, canthorides, ergot, etc., bring to a close the consideration of this important subject.

"Veterinary Toxicology" may not be the only one of its kind, for as the authors say, they have been inspired by works from previous authors, but we believe it is the first one where the veterinarian can find gathered into one single volume everything which has been written in relation to the subject of toxicology, pertaining to all domestic animals, and by it all inquirers may at a glance find what they want without being obliged to refer to many works on therapeutics, pathology, hygiene, botany or chemistry.

Medecine Légale Vétérinaire. (Veterinary Legal Medicine.)

By Mr. Alfred Gallier (J. B. Bailliere and fils, Paris.)

This is the fifth volume of the "Cadeac Encyclopædia," to which we have already alluded to on previous occasions, and when referring to the first four volumes published some time ago.

It is true, that when one on this side of the ocean receives and reads such a book, that he feels how deficient our English literature is, and how far backwards veterinary science is in this country, when compared with that of Europe.

The idea of a work on veterinary legal medicine in English would almost seem ridicule if one would not consider what can be written on the subject of great value.

Let us see what the fifth volume of the "Cadeac Encyclopædia" contains :

In the first part, where we have a definition of legal medicine properly, we are presented with the subjects of sodomy, bestiality, death, wounds in general, with all their varieties and the legislation relating to them, asphyxia, breach of warranty, contagious diseases, alimentary products and especially meat, life and accident insurances of animals, etc.

In the second part, the responsibility of the veterinarians in their various capacities, of the empirics, of the horse-shoers, of the hostlers, of the owners of animals used for breeding purposes, etc.

These formed about three-quarters of the work. Is it not enough to show the importance of the subject.

The balance (third and fourth parts) relates to the studies and practice of veterinary medicine in France, with other items relating to the same.

The fifth volume of the "Cadeac Encyclopædia," makes us wish for the early publication of the subsequent volumes, which we have no doubt will be issued in the same neat and rich manner familiar to the house of J. B. Bailliere and fils, the editors.

Friedberger and Fröhner. "Pathology and Therapeutics of Domestic Animals," translated by Prof. W. L. Zuill, M.D., D.V.S.

We have already called the attention of our readers to this excellent work when we received the French translation, and we have done the same in one of our last issues, in referring to the translation of Professor Zuill. All that remains for us to say is that the first volume is now ready and offered for sale; that the second volume will follow in a very short time the completion of the work, and we have no doubt that it will find its place in the bookcases of all veterinarians, in the classical libraries of all veterinary students, and that every veterinary college will find it mentioned among its list of text-books.

CORRESPONDENCE.

Editor AMERICAN VETERINARY REVIEW.

DEAR SIR:—While I do not wish to prolong the discussion on "education," which is assuming rather an acute state, I think that I ought to have the benefit of replying to Dr. Salmon's letter in the last issue of the REVIEW. The doctor, in his pleasantly sarcastic style, introduces me to the readers of this journal as "not yet sufficiently familiar with the English language to catch subtle meanings," thereby trying to make me appear only partly responsible for my utterances.

It is possible that I may have misconstrued the real meaning of the paragraphs in question, which Dr. Salmon thinks were aimed at him and not at me. I gladly accept this explanation and should look upon the matter as settled, were it not for the fact that the doctor brings out some points in his reply, to which I cannot possibly remain silent.

I, like Dr. Salmon, was very much annoyed, when a member of the association assailed the United States Meat Inspection Service at our last meeting, for which there was no occasion

whatever. I believe in fairness, and I should censure the report of the "high German official," who reported only two microscopes in use at the Chicago station, as unfair and contrary to my observation. From what I have seen of this service, I have always considered it as well performed, and have repeatedly so informed my friends in Germany. But while this report and the remarks of the gentleman were unjust, Dr. Salmon's angry reply, that "a certain physician told him that he found the microscopes at the Berlin abattoir, so covered with dust that he could not see through them," was just as unfair. I confess that I personally felt very much hurt by this remark, having been employed myself for several years at the Berlin abattoir, an institution of which I have always been proud, and which is being regarded as a model of sanitary science and a triumph of that branch of veterinary medicine. But not wishing to make matters worse, I kept silent, explaining this remarkable discovery to myself by the characteristic hurry with which the average American tourist is running through schools, and institutions of all kinds.

The doctor says in his letter that it has afforded him exquisite pleasure to point to the fact, that in spite of the elaborate inspection system in Germany it neither prevents trichinosis nor condemns carcasses of diseased animals, such as actinomyosis, tuberculosis, pleuro-pneumonia, etc., which if an inspector passed in this country, would cost him his position. Is not this position too lofty, Dr. Salmon?

While the United States Meat Inspection owes its origin to the German law, it can well afford to differ in the conception of what is sound and unsound flesh as long as the people of the United States pay for everything. This little meat inspection of ours is merely for a show, whereas Germany's system is for a general purpose; ours is to help along a commercial undertaking of a certain part of our population, theirs is for the benefit of a whole nation of 55,000,000 people; ours is a neat little branch of a government department; theirs is a law in itself, and a gigantic system, with a thousand branches running through the whole country.

It is all very well to say we condemn everything that is not sound, and ship to Germany only strictly healthy meat, when the carcasses condemned at home are turned loose at our local markets and are considered good enough for our own people. I never have seen so much poor meat in my life than in the Chicago butcher shops, and I hope to see the day when the United States inspection can be enforced all over the country to rectify these evils.

I fear the good doctor is under self-delusion, when he believes that the people of Germany eat unsound meat. What he calls facts are merely allegations. True, the German veterinarians have assumed a different standpoint than that of Dr. Salmon, and this by hard experience and by the decision of courts. They have to do justice to both consumers and producers of meat, wanton destruction having been condemned. There is plenty of sound meat in Germany, and that which is not strictly sound is made sound by boiling and sterilizing, and sold as such, in small pieces, to the poor people. Enormous quantities are condemned and utilized for fertilizers, etc. Everything, therefore, is made useful.

While seemingly judicious, the doctor is at present "rubbing it in hard to the Germans." I can understand his irritation from the international difficulties, but that will all go over. The veterinary profession of America owes much to England and France in educational matters, but the Bureau of Animal Industry owes its methods of scientific work entirely to German science. This will go down as history, and is being recognized already by neutral observers. In the *Veterinary Journal*, London, of January, 1895, page 58, I notice the following in a review of Dr. Theobald Smith's bulletin on investigation concerning infectious swine diseases: "The report contains evidence of much good work with an elaboration of details almost German in its extent and accuracy." I should like Dr. Salmon to assume a just attitude toward the Germans. If he will do so, they will return the compliment. Their slow logic may appear tiresome to the vivid Americans, but they will ultimately set things right.

With Dr. Salmon's views on educational matters I cannot agree at all. I readily give him credit for what he has done for the veterinary profession in a practical way. He has fought hot battles with adversaries at home and abroad, and stood firm in many a hard time, and had skill enough to come off on top of many other difficulties which would have swept minor men away. But as a veterinary pedagogue I have little faith in him as yet. I fully believe his views are honest, but if so his premises are wrong and therefore his conclusions void.

Nobody has assailed the two-year graduates as quacks in our last meeting at Philadelphia. What was said was an outflow of the general drift of opinion within the veterinary profession of the present day. The old argument that some excellent men have come out of two-year schools we all know and acknowledge. But I would rather twist my bad English and say *in spite* of the two-year course they have made excellent men out of themselves. This argument even holds good further backward, and we can prove that there were some very good men practising veterinary medicine that had never seen a veterinary college; that there are still many fields for practice where "the three-year graduate would not get a dividend upon the expense of his education, but which may be found practicable for the man who has only given two years' time and the fees of two courses of lectures for his professional education," I do not believe. Certainly I do not know of them, but I am informed that the country is overstocked with veterinarians and that they leave the profession by the hundreds.

There is no longer any need of manufacturing cheap veterinarians; neither is there further need of imparting such knowledge as a two-year school can furnish. All they can do is to give knowledge of the lowest kind, which consists of isolated facts, jammed into the students,—facts which may perhaps be retained by simple memory, but which can neither be comprehended nor interpreted by the student with a poor education. All this is merely empirical knowledge, and the men who apply such knowledge in practice can at best do it mechanically.

Higher knowledge, however, forms ideas out of scientific facts, unifies and generalizes them into systems, showing the limits of science as well as the limits of application. Such study calls for intellect, for continued, coherent work, which can only be had in a longer course, and taught only by professors who themselves know what they teach. From what I have said above it should be clear that the two-year schools are becoming a menace to our country and to our profession. The requirements of the veterinary profession are changing, the field of labor of the veterinarian is widening, and calls to him for different work, higher intelligence and education. All of this, to my firm belief, can only be accomplished by a three or four years' course of study.

Finally, Dr. Salmon thinks that there are some men "who are proclaiming themselves as the repositories of all the progressive tendencies, all the professional pride, all the unselfishness, and all the wisdom in the profession." If there are such men among us I do not know of them. I for my part wish to except myself from such classification.

The cause for all my arguments for higher education has simply been an inner feeling that a great wrong, a wicked offence is being perpetrated against our profession by some men of little education and less character in keeping up low grade schools, for the gain of money or from ignorance and incapacity. Personally I have no axe to grind for either "individuals or certain interests and institutions," but I have done all this arguing and warning from an ideal standpoint to prevent further wrongs to our profession.

OLOF SCHWARZKOPF.

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

LEAVENWORTH, KAN., January 5, 1895.

The third regular meeting of the Missouri Valley Veterinary Medical Association, was held in the parlors of the Byram Hotel, on Wednesday, December 12, 1894, at 7:30 P. M. Meeting was called to order by President Stewart.

The minutes of the previous meeting were read and approved. Many letters of regret were read from members of the profession who were unable to attend. Dr. Wattles' report, as delegate to the United States Veterinary Medical Association, was read, and, upon motion was placed on file, and a vote of thanks was given Dr. Wattles for his excellent report. The following resolution was read and adopted:

Resolved, That this association condemn the action of so-called veterinary dentists, or veterinary surgeons, in teaching that branch of veterinary science consisting of dental operations upon horses' teeth, to men that are not graduates of regular veterinary colleges, as we believe it increases the number of unqualified practitioners, and tends to lower the standard of this profession, and that teaching such men veterinary dentistry, or any branch thereof, by any member of this association, shall be considered a breach of the code of ethics.

This resolution was amended so as to include castration, spaying, or any other branch of the profession.

Owing to the presence of the editor of the *Missouri Valley Farmer*, regular business was waived, and Dr. Wattles, with the stereopticon, exhibited some grand plates of specimens of hog cholera, tuberculosis, actinomycosis, and other pathological and physiological specimens, President Stewart explaining each plate in a most acceptable manner; discussion following very interesting. Dr. McCurdy's paper on "Veterinary Legislation," was productive of much discussion, and resulted in the chair appointing Drs. McCurdy, Mayo and Hunter, a committee on legislation. Dr. S. L. Hunter read a paper on "Tuberculosis and Tuberculin."

This was followed by a most original paper by Dr. Wattles on "The Treatment of Ossific Diseases of the Horse by Hypodermic Injection of Tincture of Iodine." Good discussion followed Dr. Wattles' paper.

Resolutions were passed, urging the Comitia Minora of the United States Veterinary Medical Association, to hold the regular meeting for 1895, at Des Moines, Ia. It was the unanimous opinion that the interests of the profession would be better enhanced by holding the meeting at Des Moines, Ia.

Gentlemen appointed to prepare papers for our next regular meeting: Drs. Black, Mayo, Sihler, Cook and Lemay.

Meeting adjourned to meet in Topeka, Kan., the second Wednesday of February, 1895.

S. L. HUNTER, V.S., *Sec.*

THE ONTARIO VETERINARY ASSOCIATION.

The annual meeting of this association was held in the veterinary college, Toronto, Can., on Friday, December 21, 1894.

The President, Mr. W. Burns, V.S., opened the meeting with a few well-chosen remarks, and called for the reading of the reports.

The secretary's, registrar's and auditor's reports were then received and adopted.

Considerable discussion then ensued on the action of certain parties in issuing so-called veterinary dental diplomas. The issuing of these was very strongly condemned at the last meeting, tending as it does, to bring legitimate veterinary science into disrepute.

Reputable members of the veterinary profession consider this so-called veterinary dentistry a complete humbug.

Mr. John Wende, V.S., also a member of the New York State Veterinary Association, remarked that that Association also very strongly condemned the issuing of these veterinary dental diplomas.

Major Lloyd, Mr. Gibb, Mr. O'Neal, Mr. C. Elliott and others took part in this discussion, and it was ultimately resolved that the same committee that were appointed last year should be continued, and that their efforts should be directed to suppress this humbug.

Mr. W. J. Wilson, of London, V.S., read an excellent paper on "The Dangers of Using the Meat and also the Milk of Diseased Animals as Human Food." He called attention to the toxic properties produced by the germ of tuberculosis (the bacillus tuberculosis) being especially injurious to consumptive

patients, and that these products were still existing in the meat and milk, although the vitality of the bacillus itself may have been destroyed by cooking or otherwise. He recommended the establishment of public abattoirs, and the inspection of meat by qualified men. He also recommended that dairies should be placed under suitable inspection, and that the hygienic conditions of milch cows should be looked to—cleanliness and sufficient air space being essential.

In the discussion that followed, in which Major Lloyd, Messrs. Shaw, Cowan and others took part, it was remarked that this "tuberculin test" was a reliable diagnostic agent, but judgment must be used in applying it; that it is well to take the body temperature of other animals in the herd not injected, as variations in the temperature may be produced by accidental causes.

Mr. Cowan, veterinary inspector, said that it was well not to make unnecessary alarm in connection with tuberculosis. That the disease existed only to a slight extent in Canada amongst cattle, less than in most other countries, and that the disease was on the decrease here. He also said that the various boards of health have great power in looking into the milk supply. That there is all the law that is required in investigating the milk and meat supply, and in condemning tubercular cases.

The thanks of the meeting were voted to Mr. Wilson for his interesting paper.

Mr. A. Crowforth, V.S., of Lockport, N. Y., read an interesting and exhaustive paper on "Tuberculosis in Relation to Animal Industry and Public Health; Its Prevalence and Importance." He said that it prevails so extensively throughout the civilized world, that no disease is so deserving of close study, or of the enforcement of effective measures for its suppression. Cholera, yellow fever and small-pox, which occasionally appear, creating universal terror and dismay, claim but few victims in comparison with this ever-present and universally devastating malady. These other plagues are quick, severe and fatal, and therefore can be promptly recognized and even stamped out, whereas tuberculosis is slow and uncertain in its progress, and

often escapes recognition for a long time. It may be classed with *the pestilence that walketh in darkness*, while the other disease named, may be likened to the *destructions that waste at noon day*. He gave statistics, showing the deaths in various parts of the world in the human race, and mentioned its prevalence as the same disease in the domestic animals, produced by the same micro-organism (the bacillus tuberculosis), and the difficulty of obtaining reliable statistics. In the Middle Ages, tuberculosis in animals was recognized as contagious, and laws were made against the use of affected carcasses as human food, which remain in force in Spain and Italy to the present day. In the early part of the present century its contagious character was doubted by medical practitioners. But at the present time, in the light of numerous investigations and experiments, all candid scientific observers accept the doctrine of its contagious character. He described the germ, its history, and mode of propagation, and also the accessory causes which tend to produce the disease. But none of these causes can produce the disease in the absence of the bacillus. He described the disease in the various organs and tissues of the body, and mentioned the difficulties experienced in diagnosis. He spoke strongly in favor of "tuberculin" as a used diagnostic agent, and said those who had it most valued it the most highly. In conclusion he compared the geographic distribution of cattle and the prevalence of tuberculosis in the human race, and showed the ultimate relations of cattle to man as a potent agent in the extension and maintenance of consumption in the human family. A discussion followed, in which Messrs. O'Neil, Wilson and others took part, and a vote of thanks was tendered to Mr. Crowforth, for his interesting and exhaustive paper.

Professor Smith exhibited, from the museum of the veterinary college, specimens of "gangrenous ergotism" of the legs of cattle, from cases he had investigated last spring.

The sum of \$25.00 was appropriated for a medal to be competed for by students of the Ontario Veterinary College at the approaching spring examinations.

The following are the officers for the ensuing year: President, Mr. G. L. Robson; 1st Vice-president, H. Hopkins; 2d Vice-president, D. Hamilton; Secretary, C. H. Sweetapple; Treasurer, N. Cowan; Auditors, Messrs. O'Neil and Elliott; Directors, Messrs. J. Wende, W. Burns, J. F. Quin, N. Gibb, W. J. Wilson, T. Holder, A. Crowforth, and N. Steel.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

SAN FRANCISCO, CAL., December 12, 1894.

On the above date the California State Medical Association held its annual meeting at the Baldwin Hotel.

The meeting was called to order by the President, Dr. H. A. Spencer.

Upon roll call the following named gentlemen betrayed their presence: Drs. Maclay, Spencer, Sr., Wadams, Orvis, Fox, Archibald, Pierce, Jackson, Robin, Fabbi, Forrest, Williams, Graham, Eddy, O'Rourke, and Hogarty.

The minutes of the previous meeting were read and approved.

The annual reports of the secretary and treasurer were received and placed on file.

The board of examiners were granted further time, on the application of Dr. J. Edmons.

The legislative committee, through their chairman, submitted the following report:

MR. PRESIDENT AND GENTLEMEN: Your committee on legislation beg leave to submit the accompanying bill for your consideration and adoption; further, we would recommend the adoption of the following resolution:

Resolved, That the bill as reported be presented at the next session of the legislature, and that said committee be and they are hereby empowered to watch the progress of said bill through the legislature.

All of which is respectfully submitted

Signed,

THOMAS MACLAY,
C. B. ORVIS,
H. A. SPENCER,
R. A. ARCHIBALD.

The secretary read the bill, whereupon, on motion of Dr. Fox, the report was adopted.

The secretary moved that we have five hundred copies of the bill printed in circular form, and distributed among the members of the association. The motion was duly seconded and carried.

The committee on clinical entertainment reported that they had procured several cases for the entertainment. Upon motion the report was accepted, and the committee granted further time.

Under the head of applications for membership, the secretary submitted the following names: J. R. Shaw, A. B. Wise, J. A. Edmons, J. Trullinger, J. J. Streets, B. W. Schedde, J. W. O'Rourke, S. A. Withers, A. J. Withers, E. J. Creely, and O. C. Baldy. The names were referred to the board of examiners.

The election of officers for the ensuing year resulted as follows: President, Dr. C. B. Orvis, of Stockton; Vice-president, Dr. R. T. Whittlesey, of Los Angeles; Secretary, Dr. R. A. Archibald, of Sacramento; Treasurer, Dr. D. R. Fox, of Sacramento; Board of Examiners, Drs. Maclay, Egan, Spencer, Sr., Graham and Lemke; Board of Directors, the several officers of the association.

The secretary presented a bill for \$10.40 for secretary's supplies, etc., which was ordered paid.

The secretary moved that when this association adjourns, it be to meet in San Jose. The motion was duly seconded and carried.

Dr. Fox suggested the advisability of the association endorsing some one of its members for the position of State veterinarian. The matter was discussed in an informal manner by Drs. Spencer, Orvis, Fox, Pierce, and the secretary. During the discussion Dr. Maclay moved to adjourn for dinner. On the motion being put, the chair not being satisfied with an aye and no vote, called for a rising vote, which resulted in a tie, whereupon the chair cast the deciding vote in favor of the motion. The meeting then adjourned to meet at 7 P. M.

EVENING SESSION.

The meeting of the California State Veterinary Medical Association re-convened at 7 P. M.

The meeting was called to order by the President, Dr H. A. Spencer, who called upon the president-elect to take the chair.

The new President, Dr. C. B. Orvis, upon taking the chair delivered a few appropriate and well-chosen remarks, and as he was going to act in the capacity of an entertainer, he requested Dr. Spencer to take the chair for the rest of the evening.

Under the head of reading of papers, etc., and discussions, the chair called upon Dr. C. B. Orvis to entertain the meeting, which he did by reporting three cases of intestinal obstructions from the formation of tumors and abscesses in the sublumbar region.

The reports were very interesting and instructive, and a very animated discussion followed their reading. The chair closed the discussion with a few appropriate remarks.

Dr. W. E. Wadams was then called upon to entertain the meeting, which he did by offering an instructive and exhaustive paper on "Canine Distemper." The essayist described the disease in all its forms, giving the different symptoms, and the different methods of combating same. He also thoroughly described the different complications that might arise.

The reading of the paper was followed by a lively discussion, which was participated in by Drs. Maclay, Archibald, Orvis, Eddy, Fox, Pierce, Fabbi, O'Rourke, and Jackson. The chair closed the discussion with a few remarks, and then called for reports of peculiar cases.

The secretary reported a case of a cow whose milk contained so much acid that it was for all practical purposes useless. He said the cow had been changed from one food to another without changing the character of the milk. He also reported a few cases of what he supposed to be chronic pharyngitis, and he said that in some localities the disease seemed to be very prevalent in the late summer and fall of the year.

Dr. Orvis reported some cases of actinomycosis, and he exhibited some specimens taken from the tongues of two cows, showing the ravages of the disease. He said the cows were almost starved to death when he was called in to see them.

Under the head of new business, Dr. Maclay offered the following resolutions :

WHEREAS, It has pleased the great Architect of the universe to call from our midst one of our respected members; be it

Resolved, That in the death of Peter Burns this association loses one of its most active members and most ardent supporters; as a man, as a citizen, as a husband, and as a father he was beloved by all ; be it further

Resolved, That the heartfelt sympathy of the members of this association be, and it is hereby extended to the family of the deceased in this their hour of bereavement; be it further

Resolved, That a copy of these resolutions be spread upon the minutes, and a copy forwarded to the family.

Upon motion the resolutions were adopted unanimously.

Dr. Maclay then offered the following resolution:

Resolved, That the thanks of this association be, and is hereby extended to Dr. H. A. Spencer for the faithful and impartial manner in which he has performed the arduous duties of the office of president during the past year.

Upon motion the resolution was adopted.

The secretary offered the following resolution :

WHEREAS, It has come to our notice that there are some of the members of this association, and some who intend becoming members, who are violating Section I of the Code of Ethics, which states "That no member shall assume a title to which he has not a just claim;" therefore be it

Resolved, That it is the sense of this association that any member who refuses to discard, or who, in violation of the Code of Ethics, adopts a title to which he has not a just claim, be expelled from the association and have his name stricken from the roll of membership.

Considerable discussion followed, but finally, on motion by Dr. Maclay, the resolutions were adopted.

The chair appointed the following-named gentlemen as essayists for the next meeting : Drs. Spencer Sr., Faulkner, and Jackson.

On motion by the secretary, a vote of thanks was extended to the essayists for the able and masterly manner in which they had entertained the meeting.

There being no further business to come before the meeting, it adjourned to meet in San Jose on Wednesday, March 13, 1895.

On Thursday, December 13, 1894, at 9 A. M., the members of the California State Veterinary Medical Association assembled at Dr. J. W. O'Rourke's hospital, at 331 Golden Gate avenue, San Francisco, to witness a clinical entertainment.

The first case was the extirpation of an actinomycosis tumor from the sublingual region on a cow. The operation was skillfully performed by Drs. Spencer and Fox.

The second operation was the removal of a melanotic tumor from the lumbar region of a horse, by Dr. C. B. Orvis.

The third operation on the programme was the removal of the ovaries from a bitch, by Dr. F. E. Pierce.

The fourth and last operation was the removal of the left arytenoid cartilage and the left vocal cords for the amelioration of a condition called "roaring" in a horse, by Dr. R. A. Archibald.

The entertainment was voted an entire success, instructive as well as enjoyable.

The members, before adjournment, through the President, Dr. Orvis, upon the suggestion of Dr. Fox, extended to Dr. O'Rourke a vote of thanks for the use of his hospital, and his kindness.

R. A. ARCHIBALD, V.S., *Sec.*

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The first monthly meeting of the Keystone Veterinary Medical Association, for 1895, was called to order by President Lintz, at the home of Dr. J. B. Rayner, 135 East Gay street, West Chester, on January 8th. The weather being inclement, the attendance was small. Those answering to roll call were Drs. W. H. Hoskins, C. Lintz, McAnulty, Rayner and Rhoads.

The Chairman of the Legislative Committee denied the statement of the press that the veterinarians' bill to establish a live stock and sanitary commission in the State was intended to legislate any one out of office.

The discussion of "Cerebro Spinal Meningitis," was opened by Dr. Hoskins, who after citing several cases to substantiate his theory, claimed it to be a disease produced by taking vegetable mould, containing the germ into the system.

Dr. Rhoads cited a case where it was undoubtedly caused by vegetable mould.

Dr. Lintz believed it to be due to inhaling an atmosphere tainted with the spores and gave a vivid account of extensive experiments which he had helped carry on.

On motion the reading of a paper on "Rupture of the Stomach," by Dr. Rayner, and one on "Pathogenesis," by Dr. Rhoads, were postponed, that all the time might be given to the discussion.

W. L. RHOADS, D.V.S., *Sec.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Maine Veterinary Medical Association was held at the Cony House, Augusta, January 9, 1895, at 8 P. M., Vice-president, Dr. Huntington, in the chair.

The following members answered the roll call: Drs. Dwinal, Farnum, Huntington, Joly, Russell and Choate.

It was voted to present the original bill to the present legislature, with slight changes in the amount of fines and imprisonment to be imposed for violation of the same, so as to read as follows:

Be it enacted by the Senate and House of Representatives in legislature assembled, as follows:

SECTION 1. No person shall advertise or hold himself out as a veterinarian or veterinary surgeon, unless he is a graduate of a veterinary college or school.

SEC. 2. Any person violating the provisions of the foregoing section shall be punished by fine not less than five dollars nor more than fifty dollars, or by imprisonment of not more than three months, or by both.

A copy of the above was ordered sent to each of the members, asking them to refer the matter to the representatives from their locality, and urge said representatives to give it their favorable consideration and support.

The Executive Committee reported favorably the names of Drs. F. M. Perry, Houlton and F. E. Freeman, Belfast, for membership in the association.

In absence of the chairman of Committee on Professional Fees, Dr. Choate reported favorably the following schedule of prices, which was adopted by the association:

Single visits.....	\$ 1.50
More than one visit each.....	1.00
Country visits per mile, one way ; first mile.....	1.00
Country visits per mile, one way ; after first mile....	.50
Night attendance.....	2.00 to \$ 5.00
Per day.....	10.00 and expenses.
Consultation at office.....	1.00
Consultation with other veterinarians.....	3.00

OPERATIONS.

Castrating colts at operating room.....	3.00
Castrating colts outdoor.....	5.00
Castrating over four years old.....	5.00 to \$10.00
Castrating ridglings.....	10.00 to 15.00
Castrating small animals.....	1.00 to 3.00
Floating.....	1.00 to 2.00
Fireing.....	5.00 to 10.00
Neurotomy.....	5.00 to 10.00
Parturition.....	5.00 to 10.00
Phlebotomy.....	3.00
Quittor.....	10.00 to 15.00
Removing placenta.....	3.00 to 5.00
Removing tumors.....	5.00 to 10.00
Removing molars.....	3.00 to 5.00
Spaying bitches.....	3.00 to 5.00
Tracheotomy.....	3.00 to 5.00
Minor operations requiring casting.....	5.00

W. S. LORD, M.D.V.,
C. W. PURCELL, V.S.,
H. H. CHOATE, D.V.S.,

Committee on Professional Fees.

Drs. F. M. Perry and F. E. Freeman, were elected to membership in this association.

The election of officers resulted in the election of Geo. H. Bailey, D.V.S., President; F. W. Huntington, D.V.S., Vice-president; H. H. Choate, D.V.S., Secretary; A. Joly, D.V.S., Treasurer.

Dr. Choate presented his report for the past year as secretary, containing some suggestions which were favorably considered by the association.

It was voted to append to the present pamphlet of the Constitution and By-Laws, the names of the officers and members, with their addresses, also the time for holding the meetings.

A motion was carried to have two hundred copies of the schedule of professional fees, printed and distributed among the members. The motion was carried to hold the next meeting at Belfast, April 11, 1895. The meeting then adjourned.

OBITUARY.

DR. P. F. KIERNAN, D.V.S.

Through the kindness of Dr. D. Lemay, we have to announce the death of Dr. P. F. Kiernan, a graduate of the American Veterinary College, class of 1887, which took place in Junction City, Kan., on the 18th of February, 1895, from consumption. Dr. Kiernan was thirty-one (31) years old.

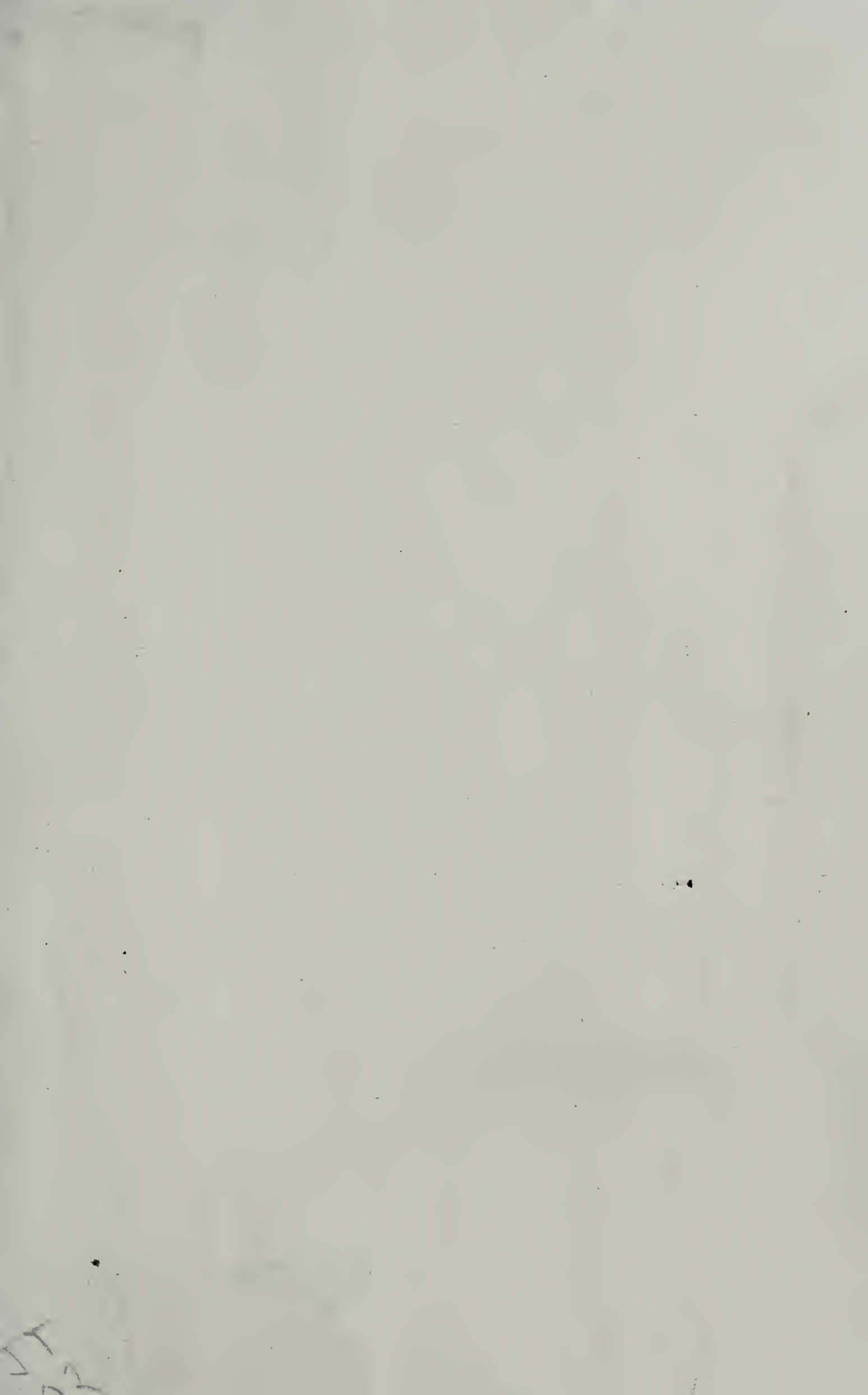
ASSISTANTSHIP WANTED

By an American Veterinary College student, class of 1896, for the summer months, with a country practitioner.

P. K. NICHOLS,

Port Richmond,

Staten Island, N. Y.



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